

ISSN[ONLINE] : 2643-9875

ISSN[PRINT] : 2643-9840

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND ANALYSIS

**VOLUME 06 ISSUE 08
AUGUST 2023**

**SJIF IMPACT
FACTOR : 7.022**

**IJMRA ASI
SCORE : 1.3**

**CROSSREF DOI
10.47191/IJMRA**

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International Journal of Multidisciplinary Research and Analysis
ISSN[Online] : 2643-9875 || ISSN[Print] : 2643-9840

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The Phenomenon of Culture Shock among Male Students at STP Khoiru Ummah Jember



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ABSTRACT: Islamic boarding school (IBS) is educational institutions that incorporate boarding school arrangements, requiring students to reside in the school dormitory. In their journey of living in an IBS, students often experience culture shock due to the cultural differences between their previous living environment and their current residence in the dormitory. This study aims to describe the factors causing culture shock, stages of culture shock, and coping strategies among male students at STP Khoiru Ummah Jember at the junior high school level. The research falls under the qualitative research category with a phenomenological approach. Data collection was conducted through participant observation and interviews using recording and note-taking techniques. Data analysis employed the explanatory method. Based on the research findings, it was found that the culture shock experienced by the students is caused by several factors, such as the packed schedule at the boarding school, the high target of Quran memorization, being far from parents, different characteristics of friends, inadequate facilities and infrastructure at the new boarding school, the boarding school's daily routine, subjects taught, and differences in ethnicity and regional languages. The culture shock experienced by the students occurs in four stages. The time required for students to adjust and become accustomed to life in the boarding school varies significantly, ranging from 2 to 10 months. The students and the boarding school have employed various methods to cope with the culture shock. The coping strategies identified in this research are expected to provide insights for other boarding schools in addressing the culture shock experienced by their students.

KEYWORDS- culture shock, islamic boarding school, khoiru ummah, jember, junior high school

I. INTRODUCTION

Education is a very important thing for humans. Through education, humans can acquire knowledge, skills, and values that are essential to help them face various challenges in life [1]. Moreover, education also helps humans develop the intellectual and social abilities needed to interact with their environment. Therefore, many educational institutions have been established, one of which is the institution of Islamic boarding schools. Islamic boarding schools are a form of education that is widely found in Indonesia. Islamic boarding schools are educational institutions that excel in implementing character education for their students [2]. In Islamic boarding schools, students learn about Islamic in depth. Not only that, many Islamic boarding schools nowadays also teach various other general subjects that are highly useful for the student's future. During their time in the Islamic boarding school, the students live in dormitories for several years. They interact and collaborate with each other in living their lives in the Islamic boarding school.

Islamic boarding schools are a meeting place for students from different backgrounds. Therefore, students in Islamic boarding schools are not exempt from engaging in cross-cultural communication with fellow students. Cross-cultural communication is communication that occurs between individuals of different nationalities, ethnicities, racial groups, languages, beliefs, or values [3][4]. As a result, the interactions and communications being carried out require a certain level of security and courtesy, as well as predictions about certain aspects of the interlocutors [5].

Cross-cultural communication occurs in various situations, both between individuals from extremely different cultures and interactions between individuals who share the same dominant culture but have different subcultures within a specific region [6][7]. By studying cross-cultural communication, individuals can learn adaptive steps to take when interacting with individuals from different cultural backgrounds. This can prevent negative perceptions between cultures, such as stereotypes, biases, racism, and ethnocentrism, when engaging in cross-cultural communication. In reality, the learning experience at Islamic

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boarding schools often triggers culture shock among students who come from different cultural backgrounds. Oberg stated that culture shock is the feeling of discomfort that arises when someone enters a foreign culture and experiences significant cultural changes from their original environment [8][9]. Bochner stated that culture shock is an individual's reaction to an unfamiliar new environment, which initially causes anxiety due to the individual losing the familiar signs and symbols from their old environment [10]. The phenomenon of culture shock is frequently found in various Islamic boarding schools, including the Sekolah Tahfiz Plus (STP) Khoiru Ummah Jember at the junior high school level.

STP Khoiru Ummah Jember is one of the Islamic-based informal education institutions managed by the Khoiru Ummah Jember Foundation [11]. STP Khoiru Ummah implements a curriculum that integrates tahfiz (Quran memorization) subjects with general subjects using the *talaqiyah fikriyah* learning method [12]. At the junior high school level, STP Khoiru Ummah Jember adopts a boarding school concept. Therefore, STP Khoiru Ummah Jember at the junior high school level resembles an Islamic boarding school. In the academic year 2022/2023, the institution has two batches, namely 7th and 8th grades. Each class is separated by gender, with separate classes for boys and girls.

In the boarding school environment, new students at STP Khoiru Ummah Jember at the junior high school level experience culture shock. The culture shock experienced by the students has different stages. Oberg divides culture shock into four stages as follows [13]:

- 1) The honeymoon stage: During this stage, individuals experience excitement and familiarity with the new culture and society. Gradually, they begin to perceive the new culture and society as their own and feel a sense of belonging.
- 2) The crisis stage: In this stage, the differences between an individual's own culture and the new culture start to create problems as they interact with others who have different cultural backgrounds.
- 3) The recovery stage from the crisis: At this stage, individuals acquire the skills to effectively respond to the new culture.
- 4) The adjustment stage: In this stage, individuals have successfully adapted to the new culture and have gained new experiences.

These stages depict the process of cultural adjustment and adaptation experienced by STP Khoiru Ummah Jember students at the junior high school level.

Based on the above, the author is interested in researching the phenomenon of culture shock experienced by new students in their first year at STP Khoiru Ummah Jember. As a relatively new educational institution, STP Khoiru Ummah Jember at the junior high school level continuously strives to improve its quality to ensure that students feel comfortable during their stay in the boarding school. Therefore, this research aims to determine the factors causing culture shock, the stages of culture shock, and the ways to overcome culture shock among the students. Thus, this research is expected to contribute to the body of knowledge, particularly in the development of cross-cultural communication studies. Additionally, it can provide insights for the management of Islamic boarding schools to enhance the student's comfort during their stay and learning in the boarding school by seeking solutions to the issues that arise.

II. LITERATURE REVIEW

Previous relevant studies have been conducted by several parties. First, Amanah [14] examined the culture shock experienced by international students at STAIN Kediri within the cultural environment of Kediri. The study found that the culture shock experienced by Thai students studying at STAIN Kediri was related to food, lifestyle (habits, socialization), weather, and religious social activities. Most Thai students attempted to overcome culture shock in their own ways, while a small number of them required assistance from others, such as friends. It took them anywhere from one to three months to adapt and acculturate to the culture of Kediri.

Second, Faizin & Isnaini [15] examined the phenomenology of culture shock among Indonesian language learners from South Africa in Malang. The study found that the culture shock experienced by these Indonesian language learners was due to several factors, including difficulties in purchasing alcoholic beverages, the habit of smoking in public, and the sensitivity of religious and racial issues in Indonesia, which made them uncomfortable. The impact of culture shock resulted in varying levels of stress among the Indonesian language learners from South Africa. They coped with culture shock by meeting and conversing with fellow countrymen and by learning about the local culture.

Third, Nurcahyo & Asy'ari [16] investigated the stages of culture shock among regular students at Darussalam Gontor University (UNIDA). The study used the U-curve theory and found that the stages of culture shock experienced by regular UNIDA students consisted of three phases: (a) the excitement phase, (b) the disappointment phase, and (c) the resolution phase. In the excitement phase, students experienced joy, hope, and euphoria. In the disappointment phase, students faced difficulties in learning the Arabic language, adhering to discipline, and were affected by negative stereotypes about Islamic boarding school that led to feelings of disappointment, depression, and dissatisfaction with their environment. In the final phase, students

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modified their behavior by learning Arabic and seeking a more positive environment, allowing them to adapt and eventually settle into UNIDA.

Fourth, Pintubatu et al. [17] studied culture shock experienced by students from North Sumatra participating in the Merdeka Student Exchange Program (PMM) at various universities in Java, including ITB, Semarang University, and ITS. The study found that these students encountered several adaptation problems in their new environment, such as difficulties in communication due to language differences, differences in food preferences, weather issues, transportation challenges, compliance with traffic rules, cost of living, and the cleanliness of the surrounding environment.

Fifth, Septantiningtyas & Sulusiyah [18] examined intercultural communication among students at Nurul Jadid Islamic Boarding School, Probolinggo in building brotherhood. The study found that students from various ethnic backgrounds built brotherhood by communicating in the Indonesian language, using both circular and linear communication patterns. At times, they used circular communication patterns that involved feedback between the communicator and the recipient. At other times, they used linear communication patterns that flowed in one direction, with feedback provided by the speaker to the listener. Additionally, there were various obstacles to intercultural communication among the students in building brotherhood, including psychological, ecological, mechanical, and cultural factors.

Based on the literature review above, we can identify the similarities and differences between previous studies and the current study. The similarity lies in the research topic, which is culture shock experienced by individuals undergoing education in an educational institution. However, the difference lies in the research subjects. The first to fourth studies focused on university students, while the fifth study focused on female students. In contrast, this research focuses on male students at the junior high school level. Additionally, this study takes place at STP Khoiru Ummah Jember, a newly established semi-boarding school. Therefore, it is expected that the phenomenon of culture shock experienced in this institution may differ from larger and more established traditional Islamic boarding schools.

III. RESEARCH METHODS

This research is a qualitative study that utilizes a phenomenological approach. Hegel argued that phenomenology refers to the experiences as they appear in consciousness and describes what one perceives, feels, and knows in their direct consciousness and experience [19][20]. The phenomenological approach is employed because this study aims to explore the experiences of culture shock that students undergo in their lives at the Islamic boarding school. The data for this research is obtained from primary sources, directly collected through the researcher's observations of the behavior and accounts of the subjects, namely the students. The research is conducted at the boarding school for male students, STP Khoiru Ummah Jember, located at Matrip street number 3A, Sumbersari District, Jember Regency, East Java Province, Indonesia.

Data collection involves the use of participatory observation and interviews. In participatory observation, the researcher engages in participation with the interlocutors by being present within the community. The techniques employed include recording and note-taking. To obtain extensive and in-depth data, the researcher focuses on studying the first-year male students, totaling nine individuals. Furthermore, to ensure data validity, the researcher conducts interviews not only with the students but also with the school principal, dormitory supervisor, homeroom teacher, and parents of the students. After data collection, the research moves on to the next phase, which is data analysis. The data obtained through interviews will be analyzed using the explanatory method [21]. This method involves in-depth analysis of the factors causing culture shock, the stages of culture shock, and the strategies for coping with culture shock. Subsequently, the results of data analysis in this study will be presented in the form of descriptions and explanations.

IV. RESULTS AND DISCUSSION

STP Khoiru Ummah Jember is an educational institution that aspires to produce generations of Quran memorizers. It is a PKBM (Community Learning Center) registered in the Education Core Data (Dapodik) of the Directorate General of Early Childhood Education, Primary Education, and Secondary Education under the Ministry of Education, Culture, Research, and Technology. The institution is registered with the NPSN P9996355. Initially, STP Khoiru Ummah Jember offered primary school education upon its establishment. As it has developed, the institution started offering junior high school education since 2021. By 2023, STP Khoiru Ummah Jember at the junior high school level has two batches, consisting of 7th and 8th grade classes for both male and female students. To ensure sufficient data for in-depth analysis, this research will focus on examining the phenomenon of culture shock experienced by male students. Based on the interviews and data analysis, the findings are presented as follows.

A. Factors Causing Culture Shock

STP Khoiru Ummah Jember students at the junior high school level are alumni of elementary schools from Jember and its surrounding areas. They continue their education at STP Khoiru Ummah at the junior high school level, which follows a

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boarding school concept. During this transition, they enter a new environment that is different from their previous school and home environments, leading to culture shock. There are various factors causing the culture shock of STP Khoiru Ummah Jember students at the junior high school level. The following describes these factors.

The primary factor causing culture shock experienced by the students is the intensive activities at the Islamic boarding school. Unlike in elementary school, where they had rest time after school, at the boarding school, their time is filled with studying and various other activities. The boarding school activities start with the tahajud prayer, requiring them to wake up early at 3:00 AM. After that, they engage in various other activities, which continue until 9:00 PM, when they can sleep. The boarding school activities differ significantly from the more relaxed activities at home, leading to culture shock. When at the boarding school, they have to utilize their time for continuous studying, leaving little time for playing, which is quite different from the ample playtime they had at home.

The second factor causing culture shock is the tahfizh or Quran memorization. As the name suggests, STP Khoiru Ummah Jember at the junior high school level aims to develop students who can memorize the Quran. They are targeted to memorize up to 9 juz (parts) of the Quran within three years at the boarding school. The order of Quranic juz memorization starts from the 30th, then 29th, 28th, 1st, 2nd, 3rd, and so on. This memorization target can be burdensome for certain students who were not accustomed to Quran memorization during their time in elementary school. However, those who were already familiar with Quranic memorization prior to joining the junior high school may not feel as pressured by the target of memorizing 9 juz.

The third factor is being away from their parents. At the boarding school, students have limited contact with their parents. They are trained to become independent, such as doing their own laundry, making their beds, studying independently, and so on. Initially, this independence can make them feel uncomfortable as they are not accustomed to it.

The fourth factor is friends. At the beginning of their stay at the boarding school, the students are not yet familiar with each other. Some of them engage in mischievous behavior or disturb their peers, such as hitting others without expecting retaliation, turning off the bathroom lights while someone is showering, refusing to wait in line for showering or getting food, occupying someone else's bed, and so on. Additionally, another cause of culture shock is the inability to socialize well. Students who struggle with socializing find it difficult to establish close relationships with their peers and may even be avoided due to their quick temper, anger issues, or lack of humor.

The facilities and infrastructure of the boarding school also contribute to culture shock. As a relatively new boarding school, STP Khoiru Ummah Jember at the junior high school level lacks complete and adequate facilities. The classrooms used for teaching are relatively small, which can make students feel cramped. Furthermore, the surrounding environment of the boarding school is another contributing factor. Some students feel uncomfortable and disgusted by the dirty and humid environment. This occurs because some students neglect their responsibilities in maintaining cleanliness, such as not fulfilling their duty to keep the premises clean.

Another factor is the enforcement of regulations at the boarding school. When students first enter the boarding school, they may feel restricted by the rules. For example, whenever they leave the dormitory, they must seek permission from the dormitory supervisor (*mudir*). Another example is the bedtime regulation. Some students were accustomed to sleeping after 10:00 PM, but at the boarding school, they are required to sleep no later than 9:30 PM. This regulation is intended to ensure they wake up the next day with a refreshed body and no drowsiness. Furthermore, another factor contributing to culture shock is the difficulty students face in understanding certain subjects, particularly those that involve calculations and memorization. The specific subjects include mathematics, physics, and Arabic language. The extensive number of subjects they study each day also contributes to the culture shock. In a single day, they attend classes for Quran memorization, Quran recitation, and three other general subjects.

The absence of mobile phones is another factor. For some students, living in the boarding school becomes uncomfortable because they cannot play games on their smartphones. This discomfort arises from their habit of playing games while at home. However, at the boarding school, students are not allowed to bring their phones. The final factor is the difference in ethnic background and regional language. Out of the nine new students, one comes from the Madurese ethnic group, while the other eight are Javanese. The student from the Madurese ethnicity experiences difficulties when their peers converse in Javanese. Similarly, students from Javanese ethnic background also face difficulties and feel slightly different from students of Madurese ethnicity.

B. Stages of Culture Shock

The stages of cultural shock experienced by students consist of four stages. The first stage is the stage of excitement. In this stage, students feel happy because they can continue their education to a higher level. Previously, they had completed their

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education in elementary school. At this phase, they are entering the education at the Islamic boarding school equivalent to junior high school. When they first stay at the boarding school, they feel excited about the new environment and new friends. They are also happy because they receive a weekly allowance from their parents. Additionally, they are pleased because the boarding school provides ready-to-eat meals three times a day without them having to cook.

The second stage is the crisis stage. After a few weeks of staying at the boarding school, students start to feel bored and weary. This is due to the daily routine at the boarding school, which starts from 3:00 AM until 9:00 PM. Some students also experience illness because they are not accustomed to the rigorous activities at the boarding school. Furthermore, they feel sadness and longing for their parents. In fact, some students want to leave the boarding school.

The third stage is the recovery stage. When feeling bored, weary, and sad, students try to find other enjoyable activities. They engage in recreational activities and play various games with their friends, such as playing soccer, archery, tag, chess, and so on. Additionally, they try to alleviate their boredom by pursuing their individual hobbies, such as reading books, writing poetry, singing, creating artwork, going for walks, keeping ornamental fish, and more.

The fourth stage is the adaptation stage. In this final stage, students have become accustomed to and adapted to life at the boarding school. They are able to participate in the school activities. Each student requires a varying amount of time to adjust to the boarding school. The time needed for adaptation ranges from 2 to 10 months.

C. How to Overcome Culture Shock

STP Khoiru Ummah Jember students at the junior high school level strive to eliminate the culture shock they experience during their stay in the dormitory. Not only the students but also the management of the boarding school have implemented various programs to address the culture shock among the students. Therefore, the ways to overcome culture shock are divided into two categories: (a) the methods employed by the students and (b) the methods employed by the boarding school management.

The students employ various activities they find enjoyable to overcome culture shock, such as developing closer friendships with fellow students and engaging in light-hearted banter during leisure time. They also begin to pursue their hobbies. Some students enjoy playing chess, drawing, reading, keeping ornamental fish, singing, and so on. On the other hand, the boarding school implements several programs to address the culture shock experienced by the students. These programs include:

1) Providing Motivation and Recognition

One of the methods employed is to provide motivation and recognition to students who show progress in various aspects of life. By providing motivation and recognition, it is hoped that students will feel motivated to consistently uphold the values taught at the boarding school.

2) Building Camaraderie through Various Means

The boarding school also strives to foster camaraderie among the students through various means, such as a rotating room system where roommates are changed periodically. The room rotation program is conducted once a month. By changing roommates regularly, it is expected that students can interact with various peers and expand their social circle within the boarding school. This can also reduce the formation of exclusive groups that may influence the desired cultural development within the boarding school. Additionally, students are placed in small teams to engage in various activities or training sessions together to solve problems. The aim of this program is to strengthen social bonds among students and enhance their ability to work together.

3) Weekend Activities

To alleviate boredom and provide wholesome entertainment, the boarding school allocates dedicated time every week for watching programs that align with the religious and cultural values taught at the boarding school. This program can also strengthen relationships among students through relaxed and entertaining activities. Furthermore, the boarding school allows students to participate in martial arts and other activities on weekends.

4) The Role of Homeroom Teacher in Mentoring

The role of homeroom teacher is crucial in efforts to address culture shock. Homeroom teacher can provide mentoring to the students every afternoon. During these mentoring sessions, homeroom teacher educates and raises awareness about factors that trigger culture shock. For example, when students feel uncomfortable in the boarding school because they can't play online games on their smartphones, the homeroom teacher provides education about the negative effects of online gaming addiction.

When students feel uncomfortable with studying in the boarding school, the homeroom teacher raises awareness about the educational goals of the boarding school and the importance of understanding the more liberal social realities outside

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the boarding school. This is aimed at helping students understand the benefits and advantages of the boarding school environment in preventing them from falling into free association. Homeroom teacher also strives to educate students about gratitude, emphasizing that not everyone is fortunate enough to have luxurious facilities and opportunities for a good education. By instilling a sense of gratitude, it is hoped that students will appreciate the opportunities given to them and focus more on their personal development.

5) Parental Visitation

In the first semester, students are provided with facilities to make video calls to their parents every weekend. In the second semester, the boarding school organizes visitation programs every weekend. Parents are given time to visit their sons and are allowed to take them out of the boarding school for a few hours. Additionally, every third week, there is a program for students to return home. So, parents can pick up their children during that time. These programs aim to alleviate students longing for their parents.

6) Parental Cooperation and Support

Parental involvement is crucial in maintaining the success of programs at the boarding school. Therefore, the boarding school actively communicates with the parents of the students, whether through regular meetings, online communication, or sharing information about the students progress. The cooperation between the boarding school and parents is expected to provide better support and understanding for the students. As a form of support and care, parents can send their children's favorite food or snacks to the boarding school. This not only brings happiness to the students but also strengthens the emotional bond between the students and their parents. The support from parents will provide extra motivation and encouragement for the students in their journey at the boarding school.

V. CONCLUSIONS

This study examines the factors causing culture shock, stages of culture shock, and coping strategies among junior high school students at STP Khoiru Ummah Jember. Based on the research findings, it was discovered that the culture shock experienced by the students is caused by several factors, such as the packed schedule at the boarding school, the high target of Quran memorization, being far from parents, different characteristics of friends, inadequate facilities and infrastructure at the new boarding school, the boarding school's daily routine, subjects taught, and differences in ethnicity and regional languages. The culture shock experienced by the students occurs in four stages. The time required for students to adjust and become accustomed to life at the boarding school varies significantly, ranging from 2 to 10 months. The students and the boarding school have employed various methods to cope with the culture shock. The coping strategies identified in this research are expected to provide insights for other boarding schools in addressing the culture shock experienced by their students.

ACKNOWLEDGMENT

We express our utmost gratitude for the opportunity to write this article titled “The Phenomenon of Culture Shock among Male Students at STP Khoiru Ummah Jember”. We would also like to extend our gratitude to Prof. Dr. Akhmad Haryono, M.Pd., and Prof. Dr. Bambang Wibisono, M.Pd., for their assistance and support in the preparation of this article. We would like to thank the school principal, the dormitory supervisor, the homeroom teacher, and the nine male students from 7th grade at STP Khoiru Ummah Jember who willingly participated as respondents in this study. Without their cooperation, this article would not have been possible. We appreciate their willingness and participation. May this article provide benefits and contribute positively to the development of education in boarding schools and society in general.

REFERENCES

- 1) R. Indy, F. J. Waani, and N. Kandowangko, ‘Peran Pendidikan dalam Proses Perubahan Sosial di Desa Tumulung Kecamatan Kauditan Kabupaten Minahasa Utara’, *HOLISTIK J. Soc. Cult.*, vol. 12, no. 4, pp. 1–18, 2019, [Online]. Available: <https://ejournal.unsrat.ac.id/index.php/holistik/article/view/25466>
- 2) I. Syafe’i, ‘Pondok Pesantren: Lembaga Pendidikan Pembentukan Karakter’, *Al-Tadzkiyyah J. Pendidik. Islam*, vol. 8, no. 1, pp. 61–82, 2017.
- 3) M. F. A. Al Mahmudi, Apriadi, and O. Hidayat, ‘Pola Komunikasi Lintas Budaya Santri di Pondok Pesantren (Studi Kasus Pondok Pesantren Modern Dea Malela)’, *KAGANGA KOMUNIKA J. Commun. Sci.*, vol. 2, no. 2, pp. 78–86, 2020, doi: 10.36761/kagangakomunika.v2i2.831.
- 4) D. H. dan F. A. Dharma, *Komunikasi Lintas Budaya*. Sidoarjo: UMSIDA Press, 2020.
- 5) A. Liliwari, *Makna Budaya dalam Komunikasi Antarbudaya*, 3rd ed. Yogyakarta: LKiS Yogyakarta, 2009.
- 6) A. Z. Fitri, ‘Pola Komunikasi Antarbudaya Santri: Studi Kasus Santri Putri Pondok Pesantren Nurul Huda NU

“The Phenomenon of Culture Shock among Male Students at STP Khoiru Ummah Jember”

- Pesanggrahan’, *J. Dakwah*, vol. 21, no. 2, pp. 155–180, 2020, doi: 10.14421/jd.2122020.2.
- 7) M. Y. Wijaya and K. Anwar, ‘Pola Komunikasi Antarbudaya Santri Pondok Pesantren Sunan Kalijogo Jabung Malang’, *AL-ITTISHOL J. Komun. dan Penyiaran Islam*, vol. 1, no. 2, pp. 99–115, 2020.
 - 8) C. N. Basri and A. A. Ridha, ‘Gegar Budaya dan Motivasi Belajar pada Mahasiswa yang Merantau di Kota Makassar’, *Psikologika J. Pemikir. dan Penelit. Psikol.*, vol. 25, no. 1, pp. 1–14, 2020, doi: 10.20885/psikologika.vol25.iss1.art1.
 - 9) K. M. R. Aldino, ‘Gegar Budaya dan Kecemasan: Studi Empiris pada Mahasiswa Bengkulu dan Maluku di Universitas Gunadarma dalam Beradaptasi di Lingkungan Baru’, *Kanal J. Ilmu Komun.*, vol. 8, no. 2, pp. 88–96, 2020, doi: 10.21070/kanal.v8i2.267.
 - 10) S. H. Maizan, K. Bashori, and E. N. Hayati, ‘Analytical Theory: Gegar Budaya (Culture Shock)’, *Psycho Idea*, vol. 18, no. 2, pp. 147–154, 2020.
 - 11) S. Santuso, A. Sariono, and A. Asrumi, ‘Variasi Kata Sapaan di Lingkungan Sekolah Tahfiz Plus Khoiru Ummah Jember: Kajian Sosiodialektologi’, *SOSMANIORA (Jurnal Ilmu Sos. dan Humaniora)*, vol. 2, no. 2, pp. 243–256, 2023, doi: 10.55123/sosmaniora.v2i2.2129.
 - 12) Z. Aini, ‘Implementasi Pembelajaran Talaqqi di Sekolah Tahfidz Plus Khoiru Ummah Pandaan (Metode Pembelajaran dan Tahfidh)’, *JIE (Journal Islam. Educ.)*, vol. 4, no. 2, pp. 189–199, 2020.
 - 13) Ibrahim, *Komunikasi Antar Budaya: Panduan Komunikasi Praktis dan Mudah*. Pontianak: IAIN Pontianak Press, 2017.
 - 14) S. Amanah, ‘Motivasi dan Culture Shock Mahasiswa Asing di STAIN Kediri dalam Lingkungan Budaya Kediri’, *J. Sos. Polit.*, vol. 4, no. 1, pp. 1–20, 2018, doi: 10.22219/sospol.v4i1.5254.
 - 15) Faizin and M. Isnaini, ‘Fenomenologi Gegar Budaya Pemelajar BIPA Asal Negara Afrika Selatan di Malang’, *J. Pendidik. Bhs. dan Sastra Indones.*, vol. 5, no. 1, pp. 27–33, 2020, [Online]. Available: <https://journal.stkipsingkawang.ac.id/index.php/JP-BSI/article/view/1600>
 - 16) F. A. Nurcahyo and N. A. S. Asy’ari, ‘Tahapan Culture Shock Pada Mahasiswa Reguler Universitas Darussalam Gontor’, *Sahafa J. Islam. Commun.*, vol. 4, no. 2, pp. 211–219, 2022, doi: 10.21111/sjic.v4i2.8367.
 - 17) S. G. Pintubatu, A. A. R. Bangun, G. L. S. Simanjuntak, S. Panjaitan, A. Manalu, and R. D. Siahaan, ‘Culture Shock Mahasiswa PMM 2 Asal Sumatera Utara di Pulau Jawa’, *J. Educ.*, vol. 5, no. 4, pp. 14946–14955, 2023.
 - 18) N. Septantiningtyas and Sulusiyah, ‘Komunikasi Antar Budaya Santri dalam Membangun Ukhuwah’, *J. Basicedu*, vol. 6, no. 4, pp. 6155–6166, 2022, doi: 10.31004/basicedu.v6i4.3188.
 - 19) A. Hadi, Asrori, and Rusman, *Penelitian Kualitatif: Studi Fenomenologi, Case Study, Grounded Theory, Etnografi, Biografi*. Banyumas: CV Pena Persada, 2021.
 - 20) J. R. Raco, *Metode Penelitian Kualitatif: Jenis, Karakteristik, dan Keunggulannya*. Jakarta: PT Grasindo, 2010.
 - 21) A. Haryono, *Etnografi Komunikasi: Konsep, Metode, dan Contoh Penelitian Pola Komunikasi*. Jember: Jember University Press, 2015.



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Social Studies Teachers' Design and Use of Technological Materials



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ABSTRACT: The aim of this research is to examine the current situation of social studies teachers regarding the design and use of technological materials in lessons. The research was conducted with the case study method, one of the qualitative research methods. The research study group consists of 15 social studies teachers, 6 female and 9 male, working in public secondary schools in Reyhanlı district of Hatay. The data collected through semi-structured interviews were analyzed by content analysis method. As a result of the research, it was found that most of the teachers follow technology through different social networks, On the other hand, they stated that they use smart boards in every appropriate unit to attract students' attention and ensure their participation in the lesson, and that the use of technology makes teaching easier and learning more permanent.

KEYWORDS: Social studies, technology, material design, material use, case study.

I. INTRODUCTION

Technology has an important place in the design of teaching materials to deliver and support course content in the age of technology (Reinders & White, 2011). Materials are used in order to achieve the goals set in the teaching process and to increase efficiency. Moyer (2001) stated that teaching materials are designed to concretize abstract concepts and make them more understandable in order to achieve teaching goals. Heafner (2004) stated that the main purpose of the use of materials in education is to create an environment that will provide permanent learning by taking into account the different learning styles of the students, and stated that the use of materials also aims to increase the academic success of the students by providing permanence in learning. The use of materials in education plays an important role in the success of the program by preparing an effective education-teaching environment and enabling students to reach the foreseen goals more easily (Green, 2019). Enriching the teaching process with well-designed materials contributes to facilitating and reinforcing learning. In this context, it can be said that it is important for an effective education-teaching process that teachers benefit from qualified materials prepared in accordance with the objectives and learner characteristics.

In learning and teaching activities carried out in almost every field of education (such as science, social sciences, health sciences), the use of various technological tools and materials that make it easier to achieve the desired gains, make the lessons more efficient (Nalçacı & Ercoşkun, 2005) and support these processes is increasing. (Duhaney, 2000). However, the tools and materials used in education and training may lose their functionality over time and may be insufficient for the teaching to reach its goals. In order to eliminate these undesirable situations, it is necessary to follow the technological developments. Because the new developments followed contribute to the classroom becoming an active learning and thinking space supported by the available technological resources and to the dynamic creation of technology integration (Berson & Balyta, 2004). The tools and materials used with the integration of technology play an important role in making the lesson fluent, enabling students to focus and participate in the lesson, and obtaining unforgettable information (Kaya, 2006; Kuloğlu, 2019). At the same time, making use of modern technologies provides a constructivist learning and teaching environment (Manfra & Hammond, 2008).

Technological tools and materials that support teaching in many ways have a very important place for the social studies course. Since the social studies course includes the concrete and abstract concepts of many social science disciplines, it requires social studies teachers to use technological tools and materials in teaching the subject. On the other hand, in social studies lessons, teaching materials such as globe and (historical and geographical) maps are used in addition to traditional textbooks (Dere & Dinc, 2017). However, in parallel with the developments in digital technologies, especially after the 2000s, different sensor Technological tools such as computers, cameras, cameras, scanners, voice recorders, projectors, smart boards, flash memory, and mobile phones that can simultaneously address their organs have begun to be preferred (Manfra & Hammond,

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2008). Especially recently; tablet computers (Aydemir, Küçük & Karaman, 2012; Lin, Wong & Shao, 2012), e-books that can be read on electronic devices such as Kindle, iPod, iPhone, iPad and Blackberry (Soydan, 2012; Öztürk & Can, 2010), three-dimensional animation (Toroğlu & İlgür, 2007), virtual museum (Çalışkan, Önal & Yazıcı, 2016), virtual reality (Kayabaşı, 2005), Webquest (İnel, & Çetin 2017), virtual classroom (Green, 2019) and augmented reality (Koçoğlu, Akkuş & Özkan, 2018) innovative technologies and applications are used.

When the mentioned technological tools and materials are used in social studies lessons, they provide various benefits to students, teachers and social studies lessons. First of all, these teaching tools develop the skills and values of problem solving, decision making, self-efficacy, self-esteem, logical, creative and critical thinking, which are among the main purposes of social studies (Açıkalin & Duru 2005; Heafner, 2004; Kaya, 2008; Lin et al., 2012). In addition, it also positively affects students' interest, attention and motivation towards the lesson, ensuring their active participation and obtaining permanent information (Akgün & Kuru-Yücekaya, 2015; İnel & Çetin, 2017; Kuzu & Yeşilyurt, 2008; Yaylak & İnan, 2018; Yeşiltaş, 2014). From the teachers' point of view, the use of technological materials; It helps teachers in providing classroom dominance, addressing different intelligence areas, concretizing abstract concepts, and facilitating learning by doing (Ateş, 2010; Güler & Bilici 2016; Doğru & Aydın, 2018).

There are also some limitations and problems in the use of technological tools and materials, the benefits and contributions of which are mentioned. In this context, especially teachers' lack of technological knowledge (or competence), insufficient infrastructure of schools (Ateş, 2010; Güler & Bilici, 2016; Doğru & Aydın, 2018), technical errors related to the system as well as misuse of technology (Çetinkaya & Keser, 2014) some problems come to the fore. In addition to these, the fact that teachers do not use technology sufficiently and effectively due to various reasons related to or independent of these problems (Akbaşı, Taşkaya, Meydan & Şahin, 2012; Kurtdede-Fidan, 2008; Şahin, 2015) is seen among the most important problems in this regard.

Technological tools and materials, which are an indispensable part of learning and teaching activities and whose features have been covered in detail so far, have been discussed in various aspects in the literature. When we look at the studies in the field of social studies (İneç & Akpınar, 2017; Özel, 2012; Yaylak, 2019; Yılmaz & Ayaydın, 2015), which are within the scope of this study, it is seen that the necessity and importance of using technological tools are primarily emphasized. In addition, in other studies, the use of technological tools and materials in social studies courses; It facilitates learning by embodying abstract concepts, helps understanding by providing the opportunity to visually and audibly present the subject, positively affects interest, attention and motivation, and provides active participation in the lesson (Bulut & Koçoğlu, 2012; Dere, 2019; İneç, 2017; Kaya & Aydın, 2011; Lin et al., 2012; Şahin & Taşyürek, 2014). In addition to these, various problems arising from teachers, schools and technological opportunities were noted in related studies (Bulut & Koçoğlu, 2012; Çoban & İleri, 2013; Özel, 2012; Ulusoy & Gülüm, 2009).

When the studies in the literature are examined; It is seen that the focus is on technology integration, the contributions of technology use in lessons, and various problems encountered. After evaluating these studies, this research was designed to reflect the current situation in the use of technology and materials in social studies courses and to contribute to current discussions in social studies teaching. With this in mind, in this research, it is aimed to examine the current situation in the use of technological tools and materials in social studies lessons in depth with the observations and experiences of social studies teachers. For this purpose, answers to the following questions were sought in the study:

1. How do social studies teachers follow technological developments?
2. What are the channels through which social studies teachers follow technological developments?
3. What are the uses of technological materials used in social studies lessons?
4. What are the benefits to teachers and students of using technological materials in social studies lessons?
5. What are the problems encountered when using technological materials in social studies lessons?
6. Do social studies teachers design the materials they use themselves?

II. METHOD

In this research, a case study design was used to deal with the current situation in social studies lessons in terms of technological material design and use in depth with the observations and experiences of social studies teachers. Case studies often examine programs, events, people, processes, institutions, social groups, and other contemporary phenomena, although sometimes they focus on a representative of a group (for example, a female principal) (Hancock & Algozzine, 2017).

A. Working Group

The study group of the research consists of 15 social studies teachers (9 male and 6 female) working in secondary schools in Reyhanlı district of Hatay province in the 2022-2023 academic year and voluntarily accepting to interview. Purposive sampling method (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2018) was used in order to reflect the current situation on

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technology material design and use in social studies lessons in the light of different perspectives. Demographic characteristics of the teachers participating in the study are given in Table 1:

Table 1. Demographic Characteristics of Participating Teachers

Variable	Category	f
Gender	Bay	9
	Behind	6
Age range	between 25-35	5
	between 36-45	8
	between 46-55	2
Operation time	1-10 years	6
	11-20 years	7
	21-30 years	3

As can be seen in Table 1, participants with different genders, age ranges and working durations took part in the study. In addition, in accordance with the research ethics, codes such as T1, T2, T3... were used instead of the real names of the teachers.

B. Data Collection Tools

A semi-structured interview form, which was prepared by the researcher and reviewed by two field experts, was prepared to get the opinions of the teachers and was used in the interviews with the social studies teachers. Semi-structured interviews are conducted to delve deeper into and fully understand a topic. A guide (question list) is prepared containing the issues to be addressed in these interviews. The prepared guide ensures that the interview proceeds without going out of scope. Despite this, the researcher can ask follow-up questions according to the research topic (Harrell & Bradley, 2009). The interview form (guide), which was prepared taking into account the mentioned features, was created in accordance with the five basic research questions that were sought to be answered in the study.

C. Collection of Data

Social studies teachers working in public secondary schools in Reyhanlı district of Hatay province were contacted to collect the data. Then, suitable times for the interview were determined, the purpose of the study was explained to the teachers and it was stated that a voice recording would be taken during the interview. Face-to-face interviews were conducted with the teachers who accepted the interview and were recorded with a voice recorder. Interview recordings were transferred to MS Word one-to-one.

D. Analysis of Data

Content analysis method was used in the evaluation of the data obtained from the interviews with the teachers. Similar data gathered around certain concepts and themes in content analysis are organized in an understandable way (Akbulut, 2012). The data evaluated by content analysis were collected and interpreted under five themes in line with the research questions.

III. RESULTS

The details of the findings obtained as a result of the analysis of the data obtained from the interviews with the social studies teachers are presented below in order.

A. Social studies teachers' status of following technological developments

Within the scope of the first research question, the status of social studies teachers' following technological developments was examined and evolved in Table 2.

Table 2. Status of Social Studies Teachers to Follow Technological Developments

Variable	Category	f
Following Status	Closely	8
	whenever possible	5
	I am following	2

As presented in Table 2, the majority of the participants (8) follow technological developments closely. In addition, other teachers gave the answers as (5) and I follow (2) whenever possible. T8, one of the participating teachers, explained the reason

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for following technological developments as follows: I follow technological developments as much as possible due to both my professional development and the requirements of the age we live in." In addition to T8, who sees keeping up with technology as one of the requirements of professional development, T5, who thinks that teachers should keep up with innovations, conveyed the following on this subject: I'm following closely. Because in the age of information and technology, the teacher needs to constantly improve himself." T2, who evaluated the subject in a different way, said, "Technology is an indispensable phenomenon, so I follow it closely. When not used in classrooms, students quickly get bored with the lesson. Technology has to be used in order to follow the changes, see the differences and ensure permanence. "As it can be understood from the quote, T2 sees it as a need to follow technology closely in order to both make the social studies course effective and attract students' attention. In addition to these, T15, "The contribution of technology to students' better understanding of the social studies course.," T7 He emphasized that "teachers should follow technology closely in order to stay up to date".

B. Channels where osyal information teachers follow technological developments

In the second research question, the channels through which social studies teachers follow the developments related to technology were examined and given in Table 3.

Table 3. Channels Social Studies Teachers Follow Technological Developments

Variable	Category	f
Social networks	Facebook, Twitter, Instagram, You Tube, WhatsApp	9
Websites	Technology and education sites (EBA, ÖBA, MEBBİS)	4
Other	social studies org	1

In Table 3, it is seen that social studies teachers follow technological developments mostly through social networks (Facebook, Twitter, You Tube Instagram, WhatsApp). In addition, teachers use technology sites to be informed about technological developments and various internet sites and Facebook groups established by social studies teachers to share. As a matter of fact, T1 gave the following details about the groups of social studies teachers he followed in order to be informed about technological developments and to share information: I follow them on social media, for example, through groups on Facebook. "Similarly, T3 stated that "I use the sites recommended by the Ministry (EBA, ÖBA, MEBBİS) and You Tube", while T15 stated that he uses other sites on the internet (Social information org).

C. Intended Use of Technological Materials of Social Information Teachers

In the third research question, the tools and materials used by the participants in their lessons and for what purposes they were used were examined and the teachers' usage purposes are given in Table 4.

Table 4. Purposes of Use of Technological Tools and Materials

Technological Product	Purpose of usage	f
Smart board	Attract attention	11
	Making learning easier	9
	Giving an example	8
	Making 3D trips	5
	Watching videos and movies	3
Telephone	For evidential purposes	7
	Internet access	5
	Communication with parents	3
	Photographing events	3
Computer	Preparing a presentation	2
e-book	Keeping the focus	1
Augmented reality	Attract attention	1

Considering the findings in Table 4, social studies teachers mostly use technological tools and materials in their classes; attracting the attention and attention of students, ensuring their participation, increasing their motivation and thus long-term permanent it is seen that they are used to prepare the ground for learning. As a matter of fact, T9: "Our course consists of abstract concepts. I use the smart board, especially to embody some concepts." he said. The social studies course, which makes use of the information produced by social sciences, includes many different concepts. T14, who drew attention to the

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importance of technology in concretizing the concepts by referring to this feature of the social studies course, explained the purposes for which he used the Education Information Network (EBA) as follows: I use EBA to assign students homework, to follow up from there, to monitor how much homework is done on the basis of classes, to check, to send instant messages to students, to give instant tasks, to reach them quickly.” he said. As can be seen, T14 draws attention to the fact that the EBA application allows him to establish good communication with the students. T11, who made 3D space trips apart from the EBA application, explained how he used it as follows: We do 3D space trips for some subjects. For example, in the social studies class, we make virtual trips to the places where the Çanakkale wars took place. “As can be seen, T11 mentioned that places that require first-hand concrete data, but which cannot be visited in person for various reasons, can be introduced to students through virtual trips. Similarly, T5 explained the function of technological tools as follows. “No matter how much you talk about the sheriff of the Hagia Sophia mosque, it is not fully formed in the mind of the student. But when you reflect it in a technological tool or show it to the child with 3D shows, it has a much more impact and he understands it better. Then we create concept maps, they learn concepts better in line with concept maps on the smart board.” As seen in the excerpt, T5 reveals the role of 3D space trips in embodying and interpreting the Hagia Sophia Mosque in the eyes of the student and learning the concepts effectively.

The findings in this section show that teachers use EBA from technological materials intensively both in the classroom and outside the classroom, and they prefer technology to concretize information.

D. Benefits of the Use of Technological Tools and Materials in Social Studies Lessons for Teachers and Students

In the fourth research question, the benefits of using technological tools and materials to teachers and students are discussed in two dimensions. In the first dimension, the benefits of using technological tools and materials for teachers were examined and given in Table 5.

Table 5. Benefits of Using Technological Materials for Teachers

Benefits	f
Making teaching easier	7
Teaching targeted outcomes	5
Concretizing the subject	4
Saving time	3
Engaging the student	1
Mastering the subjects	1
Ability to use different applications	1
See and fix bugs	1
Maintaining class dominance	1

As given in the table, social studies teachers think that using technological materials in their lessons is most beneficial for facilitating teaching. T9 explained the benefits of using technological tools as follows: Social studies is a course related to all fields of social sciences. Therefore, the use of technological materials in the classroom provides a great advantage. It helps us to convey the subject to the student in a shorter time. Thus, we both save time and help to understand the subject better.” Like T9, T12, who emphasized the issue of saving time, said: “The most important benefit for me is that it allows me to do my work more practically and faster. “He pointed out how technology made his job easier. Unlike both teachers, T1 explained how classroom dominance was increased with technology as follows: It increases the teacher's authority in the lesson. We can attract the attention of the students more. “Apart from these, T7 is self-conscious about using technological materials. “It gives the opportunity to learn by doing and to correct mistakes “also emphasized.

In the second dimension, the benefits of using technological materials for students were examined and given in Table 6.

Table 6. Benefits of Using Technological Materials for Students

Benefits	f
Ensuring permanent learning	11
Increasing motivation	5
Ensuring class participation	4
learning by doing	3

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Increasing course success	3
Appealing to different senses	2
Ensuring readiness	1
endearing the lesson	1

According to Table 6, the most important benefit of technological materials for students is that they provide permanent learning of information. T13 expressed the role of technology in this issue with the following words: Students are more interested in a subject they learn with classical methods, by using material, that is, by seeing or hearing it, because they use more sense organs, they understand it better because their interest increases, they are more successful because they understand better, and they are more motivated to lessons." T13 draws attention to the fact that technological materials increase the interest and motivation of students by appealing to more than one sense organ. In addition, T4 mentioned the benefits of technological tools and materials in attracting attention and motivation and noted the following: It grabs the attention of the students first. In other words, monotonous lectures or lectures from textbooks do not attract the attention of the student enough. However, when students' interest in the lesson increases with both visual and auditory tools, their success and motivation are also affected. I think this is the contribution of technological materials to students". As can be seen, T4 emphasized that using only traditional methods in the lesson did not attract the attention of the students, and that the lessons should be supported visually and audibly with technological tools and materials. Along with these, T11, "embodying the subjects of using technological materials", T1 "learning by doing", T5 "love the lesson" and T3 "Making the lesson efficient" highlighted its benefits.

E. Problems Encountered in Using Technological Material

In the fifth research question, the problems arising from school, family and students in the process of using technological materials were discussed and presented in Table 7.

Table 7. Problems Encountered in Using Technological Materials

Technological Product	Purpose of usage	f
School	System Problems (Virus etc.)	13
	Infrastructure Deficiencies	10
	Filtering the Ministry of National Education Network	7
	Power Outages	3
	Not following new technologies	2
	Unprotected Sites	1
	careless use	1
Family	No computer or internet at home	9
	Inability to involve parents in the process	5
	Internet and computer ban	1
Student	Use for different purposes	4

As discussed in detail in Table 7, social studies teachers emphasized various problems arising from school, family and students while using technological materials. Emphasizing one of the school-related problems, T8 explained the following: "Smartboards can be infected by many people, because they are used in different lessons and carelessly. T15, "Viruses transmitted from USB Flash drives adversely affect smart boards and therefore the use of technology in the classroom. "In a word, it draws attention to this situation. In addition, T13 drew attention to the internet connection, which is a problem for all schools, and said: "Having a good internet infrastructure while using technological materials, therefore internet should work reliably and properly. "Referring to the problems caused by the family regarding the use of technology, apart from school-related problems such as viruses and internet connection, T8 conveyed the experiences as follows: "They can't trust it because they think they're wasting their time on the internet. In order to prevent this, we first informed the parents". As it is seen, the fact that families prevent them from using technology because they do not trust their own children prevents students from benefiting from technological tools sufficiently. In addition, T2 talked about a problem that is affected by the economic conditions of families as follows: "Unfortunately, not all of my students have computers and internet at home, so sometimes we cannot do the same activity. T2 "As emphasized, students who do not have internet and computers at home have difficulty in accessing all the studies. In

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addition, some of the families have to make limitations because they have the internet and a computer and use technology incorrectly. Apart from these, T3 explained the problems arising from the parents in the use of EBA regarding home lessons as follows: "We are experiencing great difficulties because parents make some restrictions because their parents cannot be fully involved in this process, and because students use the phone to access games and social networking sites." In addition to all these problems mentioned above; They mentioned the lack of infrastructure and internet access restrictions during the use of technological materials by teachers. When the problems mentioned as a whole are evaluated, it is seen that all responsibility holders do not fulfil their responsibilities adequately during the teaching process.

In the sixth research question, the issue of whether the teachers design technological materials was discussed and presented in Table 8.

Table 8. Views on Material Design

Do you design materials related to your course?	f
Yes	1
Partially	4
No	10

As discussed in detail in Table 8, social studies teachers expressed their thoughts on technological material design. In terms of material design, the majority of the teachers stated that they use ready-made materials, and some teachers partially design materials, but there is hardly anyone who teaches the lesson with the material they designed. Regarding this situation, T9 "I cannot design the necessary materials due to the lack of tools" while T2 said "Since designing materials is a costly business, I prefer ready-made materials instead of designing them." he said. Stating that he partially designed materials, T10 said, "When I cannot find materials suitable for the subject of the course or when the existing material is not suitable for the level of my students, I design materials suitable for the purpose of the course." he said. From all these explanations above; It is understood that teachers prefer to use ready-made materials, and teachers who partially design materials do not design materials unless they have to.

IV. CONCLUSIONDISCUSSION AND RECOMMENDATIONS

In this study, which examines the current situation in the use of technological tools and materials in social studies lessons in depth with the observations and experiences of social studies teachers, answers to five research questions were sought.

The results of the first research question showed that social studies teachers follow technological developments closely and have positive views on technology use. These results are in line with the findings of studies by Spaulding (2013). In related studies, it has been determined that teachers have positive views, attitudes and skills regarding the use of technology. In addition, Spaulding (2013) determined in his study that teachers with high technology skills have more positive perceptions and attitudes towards technology than teachers with low skills. Based on this study, it is possible to say that the knowledge of participant teachers about technology use skills is effective in their positive attitude towards technology.

The results of the second research question showed that the participating teachers mostly follow technology from social networks (Facebook, Twitter, Instagram, You Tube, WhatsApp), then from various technology and education sites. Social studies teacher groups established by teachers on Facebook and various internet sites (You Tube) are used effectively. In the context of this result, in the study of Avcı, Kula & Haşlamam (2019), which included teachers from various branches, it was seen that social media tools such as YouTube, forum and WhatsApp were the most used technologies among the technologies used by the participants in the technology integration process. These results are valuable in that they show that teachers follow technological developments more through social networks that social media tools have become an indispensable part of educational activities and that plans should be made for students to use these tools in a beneficial way (Yaylak & İnan, 2018).

In the third research question, the participant teachers' purposes of using technological materials were examined. The results obtained are the smart boards, which is the technological tool that teachers use most in their lessons; It shows that they prefer to attract the attention of the students and to ensure their participation in the lesson. For this, while teachers use videos and movies related to the subject, they make 3D space trips to places where it is not possible to take their students. Participating teachers think that these activities made through the smart board contribute to the students' learning of information permanently. When the literature is examined in the context of these results, Yılmaz & Naci (2017), in their study with participants from various branches, revealed that teachers use smart boards to reflect teaching materials, use them in the lesson, show them to students and make various applications. In addition, in the researches conducted by Kaya & Aydın (2011)

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and Aykat (2017), the use of smart boards; It has been determined that it is effective in attracting students' interest and attention, increasing their motivation and ensuring their participation. Çoklar & Tercan (2014) stated that it provides permanent learning by facilitating teaching have emphasized."

The results of the fourth research question and the benefits of using technological materials in social studies lessons for teachers and students were examined. From the teacher aspect, the use of technological materials facilitates teachers' work in teaching activities by concretizing the subject and saving time. From the student perspective, the use of technology; It provides a basis for the students' knowledge to be permanent, their motivation to increase, their active participation in the lessons and their learning by doing. This result is in line with the results presented in many studies in the literature. In this context, in some studies (Akgür, Uzunöz & Meydan, 2019; Brandström, 2011; Demir, 2015; Erdem, Uzal & Saka, 2018; İneç, 2017), the use of technological materials in school; It has been pointed out that it helps to attract the attention of the students, concretize the subjects and increase their motivation, thus contributing to the permanent learning of the students, saving time and facilitating the teacher's work. Apart from these results, Preston, Wiebe, Gabriel, McAuley, Campbell & MacDonald (2015) found that the use of technology enables active participation of students and teachers to be more productive as it increases learning motivation. These results reveal the importance of using technological materials in social studies courses.

The results related to the fifth research question showed that teachers mostly encounter problems arising from system (connection, not opening keys, virus, neglect, updating, etc.) and inadequacy of infrastructure while using technological materials. After computers and smart boards became widespread in schools in Turkey, there are many studies examining the problems that arise due to the increase in the use of technological materials in the classrooms. Karakus & Karakus, 2017); Riasati, Allahyar & Tan, 2012; Keleş, Öksüz & Bahçekapılı, 2013; Güler & Bilici 2016; Adıgüzel, 2010; Riasati et al., in their 2012 studies; during teachers' use of technology; School-related problems such as virus infection on the smart board, disruption of touch, encountering problems with accessing the internet, key lock, activation, screen shifting, infrastructure deficiencies in schools, lack of knowledge and skills of teachers, and negative attitudes of students and teachers were emphasized.

On the other hand, other problems encountered during the use of technological materials in the literature include the misuse of technology, its use for personal purposes, its use for purposes other than education, and it shows that both students and teachers are not trained as good technology and media literate (Açıklın, 2014; Açıklın & Duru, 2005; Avcı et al., 2019; Çetinkaya & Keser, 2014; Keleş et al., 2013; Preston et al., 2015; Yılmaz & Naci, 2017).

The results show that the use of technological materials makes many important contributions to social studies courses. However, the effective use of computer technologies and technological materials, which have the potential to support the principles of constructivist pedagogy in social studies lessons, and their contribution to teaching and students, depends entirely on the quality of the instructional design created by the teacher. For this reason, it is important to develop the knowledge and skills of social studies teachers about technology and to solve the problems they encounter.

The results for the sixth research question showed that teachers mostly used ready-made materials in material design. Although the 21st century is characterized as the age of technology, it would not be wrong to say that the best teaching is teachers, the best materials are books, and the best transmission tool is language. It is thought that teachers and textbooks will be among the important course resources for a long time in the ongoing processes (Çelikten, Şanal, & Yeni, 2005). However By better understanding the relationship between teachers' learning and design, new and original designs suitable for different learning styles materials should be designed. Because; effectiveness of education and training activities, originality of teaching materials, student level and is directly proportional to its suitability for needs. By designing innovative teaching materials, teachers It is one of the basic elements of the changing understanding of education and teaching programs.

In this context, some suggestions can be offered to school administrators, teachers and academicians:

1. In future studies, different research designs and different number of participants can be used.
2. Experimental studies can be carried out to determine the level of use of the materials designed by the teachers.
3. Trainings on material design can be given to teachers.
4. Connections can be established between social studies courses and different courses on the use of technological materials.
5. Action researches can be conducted to identify and solve problems in the use and design of technological materials.

REFERENCES

- 1) Açıklın, M. 2014 "How Turkish middle school students use the internet to study social studies." *Canadian Social Studies*, 47(1), 1-17.
- 2) Açıklın, M., & Duru, E. 2005 "The use of computer technologies in the social studies classroom." *Turkish Online Journal of Educational Technology-TOJET*, 4(2), 18-26.
- 3) Adıgüzel, A. 2010 "İlköğretim okullarında öğretim teknolojilerinin durumu ve sınıf öğretmenlerinin bu teknolojileri

Social Studies Teachers' Design and Use of Technological Materials

- kullanma düzeyleri." Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi, 15, 1-17.
- 4) Akbaşı, S., Taşkaya, S. M., Meydan, A., & Şahin, M. 2012 "Teachers and computer technology: Supervisors' views." *International Journal of Research in Social Sciences*, 2(2), 113-124
 - 5) Akbulut, Y. (2012). Veri çözümlene teknikleri. Ali Şimşek, (ed). *Sosyal Bilimlerde Araştırma Yöntemleri* (ss. 162-195). Eskişehir: Anadolu Üniversitesi Açıköğretim Yayınları.
 - 6) Akgün, M., & Koru-Yücekaya, G. 2015 "Akıllı tahta kullanımına yönelik öğrenci tutumu ve öğretmen görüşlerinin incelenmesi (Ankara ili örneği)." *E-Journal of New World Sciences Academy (NWSA)*, 10(3), 1-11.
 - 7) Akgür, M. Ş., Uzunöz, A., & Meydan, A. 2019 "Coğrafya öğretiminde interaktif ders sunumu kullanımı." *Uluslararası Sosyal Bilimler Eğitimi Dergisi*, 5(1), 47-56.
 - 8) Ateş, M. 2010 "Ortaöğretim coğrafya derslerinde akıllı tahta kullanımı." *Marmara Coğrafya Dergisi*, 22, 409-427.
 - 9) Avcı, Ü., Kula, A., & Haşlamam, T. 2019 "Öğretmenlerin öğrenme-öğretme sürecine entegre etmek istedikleri teknolojilere ilişkin görüşleri." *Acta Infologica*, 3(1), 13-21.
 - 10) Aydemir, M., Küçük, S., & Karaman, S. 2012 "Uzaktan eğitimde tablet bilgisayar kullanımına yönelik öğrenci görüşlerinin incelenmesi." *Eğitim ve Öğretim Araştırmaları Dergisi, Journal of Research in Education and Teaching*, 1(4), 153-159.
 - 11) Aykat, Ş. (2017). Mesleki Lise Öğretmenlerinin, Öğrencilerinin ve İdarecilerinin Hizmetiçi Eğitim Öncesi İle Sonrası Etkileşimli Tahtaya İlişkin Görüşlerinin İncelenmesi, Yayınlanmamış yüksek lisans tezi, Van Yüzüncü Yıl Üniversitesi, Eğitim Bilimleri Enstitüsü, Van.
 - 12) Berson, M. J., & Balyta, P. 2004 "Technological thinking and practice in the social studies: transcending the tumultuous adolescence of reform." *Journal of Computing in Teacher Education*, 20(4), 141-150.
 - 13) Brandström, C. (2011). Using the internet in education-strengths and weaknesses. Unpublished graduate dissertation, Hogskolan, Gavle. Retrieved from <http://www.diva-portal.org/smash/get/diva2>.
 - 14) Bulut, İ., & Koçoğlu, E. 2012 "Sosyal bilgiler öğretmenlerinin akıllı tahta kullanımına ilişkin görüşleri (Diyarbakır ili örneği)." *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, 19, 242-258.
 - 15) Büyüköztürk, Ş., Kılıç-Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. 2018 *Eğitimde Bilimsel Araştırma Yöntemleri* (25. Baskı). Ankara: Pegem Akademi.
 - 16) Çalışkan, E., Önal, N., & Yazıcı, K. 2016 "Öğretim etkinliklerinde sanal müzelerin kullanımına ilişkin sosyal bilgiler öğretmen adayları ne düşünüyor." *Turkish Studies*, 11 (3), 689-706.
 - 17) Çelikten, M: Şanal, M. Yeni, Y. 2005 "Öğretmenlik mesleği ve özellikleri." *Erciyes Üniversitesi Sosyal Bilimler Fakültesi Enstitüsü Dergisi*, 2, (19), 207-237.
 - 18) Çetinkaya, L., & Keser, H. 2014 "Öğretmen ve öğrencilerin tablet bilgisayar kullanımında yaşadıkları sorunlar ve çözüm önerileri." *Anadolu Üniversitesi Eğitim Bilimleri Enstitüsü Dergisi*, 4 (1), 13-14.
 - 19) Çoban, A., & İleri, T. 2013 "Sosyal bilgiler öğretmenlerinin öğretim teknolojileri ve materyalleri kullanma düzeyleri ve kullanamama sebepleri." *Amasya Üniversitesi Eğitim Fakültesi Dergisi* 2(1), 194-213.
 - 20) Çoklar, A. N., & Tercan, İ. 2014 "Akıllı tahta kullanan öğretmenlerin akıllı tahta kullanımına yönelik görüşleri." *İlköğretim Online*, 13(1), 48-61.
 - 21) Demir, O. 2015 "Okul öncesi öğretmenlerin bilişim teknolojilerini kullanma durumları ve bunun öğretime etkisi (Nitel bir çalışma)." *Uluslararası Eğitim Bilimleri Dergisi*, 4, 466-479.
 - 22) Dere, İ. 2019 "Sosyal bilgiler öğretmen adaylarının öğretim materyali geliştirme ve kullanımı hakkındaki görüşleri." *Balıkesir Üniversitesi Sosyal Bilimler Dergisi*, 22(41), 89-112.
 - 23) Dere, İ., & Dinç, E. 2017 "Sosyal bilgiler derslerinden kalanlar: 1960'dan günümüze kadar sosyal bilgiler dersini alanların hatıraları." *Diyalektolog Ulusal Sosyal Bilimler Dergisi*, 16, 21-39.
 - 24) Doğru, E., & Aydın, F. 2018 "Coğrafya öğretmenlerinin teknolojik pedagojik alan bilgisi (TPAB) hakkındaki düşünceleri ve bunu kullanma durumları." *Eğitim Kuram ve Uygulama Araştırmaları Dergisi*, 4(2), 88-100.
 - 25) Duhaney, D. C. 2000 "Technology and the educational process: Transforming classroom activities." *International Journal of Instructional Media*, 27(1), 67-72.
 - 26) Erdem, A., Uzal, G., & Saka, M. 2018 "High school students' proficiency perceptions to the usage of technology products at physics lessons." *Turkish Online Journal of Educational Technology-TOJET*, 17(2), 55-67.
 - 27) Green, J. J. 2019 *The Effects of Today's Technology On Student Learning İn Higher Education*, Unpublished Doctoral Dissertation, Baker College, Michigan.
 - 28) Güler, Ç. & Bilici, S. 2016 "Ortaöğretim öğretmenlerinin TPAB düzeylerinin öğretim teknolojilerini kullanma durumlarına göre incelenmesi." *İlköğretim Online*, 15 (3) , 0-0 . DOI: 10.17051/io.2016.05210
 - 29) Hancock, D. R., & Algozzine, B. 2017 *Doing Case Study Research: A Practicalguide For Beginning Researchers* (3rd

Social Studies Teachers' Design and Use of Technological Materials

- Edition). New York: Teachers College Press.
- 30) Harrell, M.C. and Bradley, M.A. 2009 Data Collection Methods: Semi-Structured Interview and Focus Groups. RAND National Defense Research Institute, Santa Monica.
 - 31) Heafner, T. 2004 "Using technology to motivate students to learn social studies." *Contemporary Issues in Technology and Teacher Education*, 4(1), 42-53.
 - 32) İneç, Z. F. 2017 "Sosyal bilgiler dersinde geo-medya destekli otantik öğrenme ortamının öğrenmeye etkisi." Yayınlanmamış doktora tezi, Erzincan Üniversitesi, Erzincan.
 - 33) İneç, Z. F., & Akpınar, E. 2017 "Sosyal bilgilerin otantik öğretiminde yeni yaklaşımlar." *Uluslararası Sosyal Alan Araştırmaları Dergisi*, 6(2), 46-65.
 - 34) İnel, Y., & Çetin, T. 2017 "Sosyal bilgiler öğretiminde kullanılan bilgisayar temelli materyallerin 6. sınıf öğrencilerinin dikkat düzeylerine etkisinin elektroensefalografi cihazı aracılığıyla tespiti." *Journal of History Culture and Art Research*, 6(4), 831-848.
 - 35) Karakuş, İ., & Karakuş, S. 2017 "Akıllı tahta kullanımına yönelik ortaöğretim öğretmenlerinin görüşlerinin incelenmesi." *Turkish Journal of Educational Studies*, 4(2), 1-37.
 - 36) Kaya, B. 2008 "Sosyal bilgiler dersinde teknoloji kullanımı." *GÜ Gazi Eğitim Fakültesi Dergisi*, 28(3), 189-205.
 - 37) Kaya, H., & Aydın, F. 2011 "Sosyal bilgiler dersindeki coğrafya konularının öğretiminde akıllı tahta uygulamalarına ilişkin öğrenci görüşleri." *Zeitschrift Für Die Welt Der Türken, Journal of World of Turks, ZfWT*, 3(1), 179-189.
 - 38) Kaya, Z. 2006 *Öğretim Teknolojileri ve Materyal Geliştirme* (2. Baskı). Ankara: Pegem Akademi.
 - 39) Kayabaşı, Y. 2005 "Sanal gerçeklik ve eğitim amaçlı kullanılması." *TOJET: The Turkish Online Journal of Educational Technology*, 4(3), 151-158.
 - 40) Kazu, H., & Yeşilyurt, E. 2008. "Öğretmenlerin öğretim araç-gereçlerini kullanım amaçları." *Fırat Üniversitesi Sosyal Bilimler Dergisi*, 18(2), 175-188.
 - 41) Keleş, E., Öksüz, B. D., & Bahçekapılı, T. 2013 "Teknolojinin eğitimde kullanılmasına ilişkin öğretmen görüşleri: Fatih projesi örneği." *Gaziantep University Journal of Social Sciences*, 12(2), 353-366.
 - 42) Koçoğlu, E., Akkuş, İ., & Özkan, U. 2018 Yeni bir öğrenme ortamı olarak artırılmış gerçeklik uygulamalarıyla sosyal bilgiler öğretimi. R. Sever, M. Aydın & E. Koçoğlu. (Ed.), *Alternatif Yaklaşımlarla Sosyal Bilgiler Eğitimi İçinde* (ss. 313-340). Ankara: Pegem Akademi.
 - 43) Kuloğlu, A. 2019 "Öğretmen adaylarına göre öğretim teknolojileri ve materyal tasarım dersi." *Turkish Journal of Educational Studies*, 6(1), 33-44.
 - 44) Kurtdede-Fidan, N. 2008 "İlköğretimde araç gereç kullanımına ilişkin öğretmen görüşleri." *Kuramsal Eğitimbilim Dergisi*, 1(1), 48-61.
 - 45) Lin, C. P., Wong, L. H., & Shao, Y. J. 2012 "Comparison of 1: 1 and 1: m CSCL environment for collaborative concept mapping." *Journal of Computer Assisted Learning*, 28(2), 99-113.
 - 46) Manfra, M. M., & Hammond, T. C. 2008 "Teachers' instructional choices with student-created digital documentaries: Case studies". *Journal of Research on technology in Education*, 41 (2), 223-245.
 - 47) Nalçacı, A., & Ercoşkun, M. H. 2005 İlköğretim sosyal bilgiler derslerinde kullanılan materyaller. *Kazım Karabekir Eğitim Fakültesi Dergisi*, 11, 141-154.
 - 48) Özel, E. 2012 "Sosyal bilgiler öğretmenlerinin öğretim teknolojilerine yönelik tutum ve davranışları." *Doğu Coğrafya Dergisi* 19(31), 129-144.
 - 49) Öztürk, E., & Can, İ. 2010 "İlköğretim 5. sınıf öğrencilerinin elektronik kitap okumaya ilişkin görüşleri." *Türkiye Sosyal Araştırmalar Dergisi*, 171 (171), 137-153.
 - 50) Preston, J. P., Wiebe, S., Gabriel, M., McAuley, A., Campbell, B., & MacDonald, R. 2015 "Benefits and challenges of technology in high schools: A voice from educational leaders with a Freire echo." *Interchange*, 46 (2), 169-185.
 - 51) Reinders, H. ve White, C. 2011 "Learner autonomy and new learning environments." *Language Learning and Technology*, 15(3), 1-3.
 - 52) Riasati, M. J., Allahyar, N., & Tan, K. E. 2012 "Technology in language education: Benefits and barriers." *Journal of Education and Practice*, 3(5), 25-30.
 - 53) Soydan, E. 2012 "E-kitap teknolojisi ve basılı kitabın geleceği." *Batman Üniversitesi Yaşam Bilimleri Dergisi*, 1 (1), 389-399.
 - 54) Spaulding, M. 2013 "Preservice and in-service teachers' perceptions toward technology benefits and integration." *Journal of Learning in Higher Education*, 9(1), 67-78.
 - 55) Şahin, İ. F., & Taşyürek, Z. 2014 "Sosyal bilgiler öğretmenlerinin derslerde kullanmış oldukları araç-gereçler hakkındaki

Social Studies Teachers' Design and Use of Technological Materials

- görüşleri (Erzurum örneği)." *Doğu Coğrafya Dergisi*, 36, 29-42.
- 56) Şahin, M. 2015 "Öğretim materyallerinin öğrenme-öğretme sürecindeki işlevine ilişkin öğretmen görüşlerinin analizi." *Kastamonu Eğitim Dergisi*, 23(3), 995-1012.
- 57) Toroğlu, A., & İçingür, Y. 2007 "Üç boyutlu bir animasyon sisteminin tasarımı ve teknoloji eğitiminde kullanılması." *Politeknik Dergisi*, 10 (3), 247-252.
- 58) Ulusoy, K., & Gülüm, K. 2009 "Sosyal bilgiler dersinde tarih ve coğrafya konuları işlenirken öğretmenlerin materyal kullanma durumları." *Journal of Kirsehir Education Faculty*, 10(2), 85-99.
- 59) Yaylak, E. 2019 "The attitudes and opinions of prospective teachers towards the use of technology in education." *IJETSAR (International Journal of Education Technology and Scientific Researches)*, 4(9), 149-175.
- 60) Yaylak, E., & İnan, S. 2018 "Sosyal bilgiler öğretmenlerinin eğitimde sosyal medyanın kullanılmasına yönelik görüşlerinin incelenmesi." *Türkiye Bilimsel Araştırmalar Dergisi*, 3(1), 1-32.
- 61) Yeşiltaş, E. 2014 Sosyal bilgiler öğretiminde öğretim materyalleri ve teknolojileri. M. Safran. (Ed.), *Sosyal Bilgiler Öğretimi İçinde* (ss. 225-241). Ankara: Pegem Akademi.
- 62) Yılmaz, K., & Ayaydın, Y. 2015 "Sosyal bilgiler öğretmenlerinin öğretim teknolojileri kullanımına ilişkin alt yapılarının ve yeterlilik algılarının incelenmesi: Nitel bir çalışma." *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 15(USBES Özel Sayısı I), 87-107.
- 63) Yılmaz, K., & Naci, S. 2017 "Eğitimde tablet bilgisayar ve akıllı tahta kullanımına ilişkin öğretmen görüşleri." *International Journal of Innovative Research in Education*, 4(1), 17-27.



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The Influence of Tata Gym on the Progress and Pain of Labor



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ABSTRACT: Gymnastics and Yoga reduce the influences of anxiety in pregnancy, both help the body to be ready for childbirth and help to strengthen the pregnant women. Gymnastics is a form of coping to avoid physical stress due to pregnancy, such as leg and back cramps. Yoga is body exercise and it helps to understand how the body works. Tata Gym is one of the pregnancy exercises for pregnant woman that is developed by combining the movements of pregnancy exercise and yoga. The purpose of this study is to determine the differences in Tata Gym and yoga on the progress of labor. Methods: This study applied a post-test only with control group design. The research sample was 60 pregnant women who were selected using a purposive sampling technique, which were further divided into two groups, each being the intervention group (30 people) and the control group (30 people). In both groups, the progress of labor and level of labor pain were measured. Furthermore, the differences in labor progress and labor pain levels were tested using Chi-square tests. Results: The results showed that there was no difference in the progress of labor in the first stage between the groups of mothers who practiced Tata Gym and Yoga. There were differences in the progress of labor in the second stage between groups of mothers who practice Tata Gym and Yoga. The group of mothers who practiced Tata Gym experienced less labor pain than the group of mothers who practiced Yoga. Conclusion: Tata Gym is more effective to increase the progress of labor in the second stage and reduce labor pain than Yoga.

KEYWORDS: Yoga, elderly, blood pressure

I. INTRODUCTION

Pregnancy is one of the stages in life that must be prepared by a woman from the beginning of her pregnancy. During the process of pregnancy, physiological and psychological changes occur due to the increase of oestrogen and progesterone hormones which cause discomfort in pregnancy. Feelings of anxiety often occur during pregnancy, especially in primigravida which ends during labor. Anxiety arises from fears of safe labor and labor pain. Well prepared preparation will have an important role in pregnancy [1, 2].

Exercise reduces the influences of anxiety in pregnancy and makes the body ready for labor. The recommended exercise is pregnancy exercise, which helps woman's body to be stronger [3]. Gymnastics is an exercise in reversing the influences of stress that involves the parasympathetic part of the central nervous system. Pregnancy exercise is a form of physical activity that is beneficial because it develops body muscles, increases elasticity of the pelvic muscles and ligaments and decreases the incidence of bleeding during and after childbirth, and can reduce the incidence of fetal distress. Gymnastics is a form of coping that can avoid physical stress due to pregnancy, such as leg and back cramps [3,4]. The results of the Sicilian study (2016) showed that pregnancy exercises were influenceive against the time of labor with a P value <0.005 [5].

Ambivalent attitude is often experienced by pregnant women, meaning that sometimes they feel joyful and happy because they will soon become mothers and parents. Progesterone and estrogen levels in pregnancy will increase which causes discomfort in pregnancy [6-8].

In addition to pregnancy exercise, one of the sports activities that can be carried out during the prenatal period is yoga [8, 9]. Yoga is the best body workout exercise because it trains the muscles of the body and helps the pregnant women to understand how the body works. Breathing exercises are the most important element in doing yoga and ability to breathe well is very beneficial for the mother [9, 10].

Yoga helps the mother to be relaxed, and relaxation will inhibit the increase in sympathetic nerves, so the hormones that cause the body's dysregulation can be reduced. Priharyanti's research (2018) states that prenatal yoga has a positive influence on reducing anxiety levels of primigravida mothers in trimester II and III with a p-value of 0.004 [11].

Antenatal visits to trimester III (K4) in Karawang District decreased in 2016 which was 98.49% and mothers who did not do antenatal checks by 5.48%. Labor assistance met the national target of 97.30% with a higher number of deliveries at 2390

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cases and 1960 cases of normal labor. This is due to complications during pregnancy or childbirth and the patient's request for SC on the grounds of worrying about pain during normal labor [12].

II. METHOD

This research was conducted at the Musyasyfah Clinic in Karawang Regency, West Java, Indonesia from June to September 2019. This study applied a post-test only with control group design. The intervention group carried out Tata Gym, while the control group did yoga. The research sample was 60 pregnant women who were selected using a purposive sampling technique, which were further divided into two groups, each being the intervention group (30 people) and the control group (30 people). In both groups, the progress of labor and level of labor pain were measured. Furthermore, the differences in labor progress and labor pain levels were tested using logistic regression tests. This research had passed the ethical evaluation by the Health Research Ethics Committee of Poltekkes Kemenkes Jakarta I

III. RESULTS

The results showed that there was no difference in the progress of labor in the first stage between the groups of mothers who practiced Tata Gym and Yoga (Table 1). Table 2 shows that there are differences in the progress of labor in the second stage between groups of mothers who practice Tata Gym and Yoga. In this case, the progress of labor was faster in the group of mothers who carried out Tata Gym.

Meanwhile, Table 3 shows that the group of mothers who practiced Tata Gym experienced less labor pain than the group of mothers who practiced Yoga.

Table 1: The influence of Tata Gym and Yoga on the progress of labor stage I

Stage I	Variable				p-value
	Tata Gym		Yoga		
	Frequency	Percentage	Frequency	Percentage	
Not crossing alert line	26	86.7	23	76.7	0.506
Crossing alert line	4	13.3	7	18.3	

Table 2: The influence of Tata Gym and Yoga on the progress of labor stage II

Stage II	Variable				p-value
	Tata Gym		Yoga		
	Frequency	Percentage	Frequency	Percentage	
30-60 Minutes	22	73.3	12	40	0.018
≥60 Minutes	8	26.7	18	60	

Table 3: The influence of Tata Gym and Yoga on the reducing of labor pain

Labor pain	Variable				p-value	OR	IK 95%	
	Tata Gym		Yoga				Min	Max
	f	%	f	%				
Mild (4-6)	13	43.3	5	16.7	0.090	3.714	1.078	12.797
Moderate (7-9)	14	46.7	20	66.7	0.038	4.333	0.742	25.29
Severe (10)	3	10	5	16.7	0.103	0.385		

IV. DISCUSSION

The results showed that there was no difference in the progress of the first stage of labor between mothers who practiced Tata Gym and Yoga. In addition to these two interventions, the progress of the first stage of labor is also influenced by the size of the fetal head, presentation, location, attitude and position of the fetus. In addition, it is also influenced by birth canal factors such as the mother's pelvis and reproductive organs [13]. Regarding the intervention of the Gym, according to Almasyhur (2010), pregnancy exercise and yoga have a relationship with the strength of the pelvic floor muscles. Primigravida experienced an increase of 1.75 mmHg in the non-contracted condition and 1.5 mmHg in the contraction condition [14]. The progress of labor

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can be faster and the pain will be reduced if the mother is able to relax during her period. Relaxation by regulating breathing is done with the aim of helping to increase abdominal pressure [15].

In the second stage, the group of mothers who carried out the Tata Gym experienced faster labor progress. One of the causes of the slow progress of labor is anxiety facing childbirth, and having a weak physique. Labor pain felt by the mother can reduce the ability of the uterus to contract, thus hampering the progress of labor [13]. Gymnastics is useful for strengthening and maintaining the elasticity of the abdominal wall muscles, ligaments, pelvic floor muscles associated with childbirth [16]. Pregnancy yoga aims to prepare pregnant women physically, mentally, and spiritually to face the labor process. Exercise and yoga during pregnancy provide benefits during pregnancy and childbirth [17]. Sri Wahyuni (2013) reported that there was a significant relationship between pregnancy exercise and childbirth [18].

The group of mothers who did the Tata Gym felt lighter labor pains. This is in line with the results of Simamora's research in Apriana (2011) [19]. In accordance with Annisa's research (2017), the average pain scale of the first stage in primigravida who does pregnancy exercise is 7.3 with a minimum value of 5 and a maximum of 9 and the average in primigravida who does pregnancy yoga is 5.6 with a minimum value of 4 and a maximum of 8 [20].

V. CONCLUSION

Tata Gym is more effective to increase the progress of labor in the second stage and reduce labor pain than Yoga.

VI. ACKNOWLEDGMENT

The researcher would like to thank various parties who have participated and helped from the beginning to the end of this research process including the leadership elements of the Jakarta I Poltekkes, the Head of the Center and the Head of the Research and Community Service Institute institutions as research partners.

REFERENCES

- 1) Guyton AC, Hall JE. Buku Ajar Fisiologi Kedokteran. Jakarta: EGC; 2008.
- 2) Bobak L, Irene, et al. Keperawatan Maternitas. Translator: Maria A. Wijayanti. Jakarta: EGC; 2005.
- 3) LeUnes A; Nation JR. Sport Psychology. USA: Wadsworth; 2002.
- 4) Pudjiati S. Yoga untuk Kehamilan Sehat, Bahagia, dan Penuh Makna. Bandung: Penerbit Qanita. 2009.
- 5) Yanuaria SP, Djuwantono T, et al. Penerapan Senam hamil dan Efektifitasnya Terhadap Lama Persalinan, Robekan Perineum dan hasil Luaran Bayi. IJEMC. 2016;3(2).
- 6) Brown, et al. Sudarshan Kriya Yogic Breathing in The Treatment of Stress, Anxiety and Depression: Part I Neurophysiologic Model [Internet]. 2005 [Cited 2016 Jun 10]. Available from: http://www.thevirafoundation.org/images/Trauma_Treatment_Breathwork_Part_I.pdf
- 7) Beddoe AE, Yang CP, Kennedy HP, Weiss SJ, Lee KA. The influences of mindfulness-based yoga during pregnancy on maternal psychological and physical distress. Journal of Obstetric, Gynecologic, and Neonatal Nursing: JOGNN. 2009;38(3):310-319.
- 8) Mitchell, Jennifer L. Yoga Influences on Prenatal Depression. Makassar: UMI; 2012.
- 9) Krisnandi, Rifayani S. Sinopsis Yoga untuk Kehamilan: Sehat Bahagia dan Penuh Makna [Internet]. 2010 [Cited 2015 Aug. Available from: <http://bukukita>.
- 10) Kushartanti W, Soekamti ER, Sriwahyuniati CF. Senam Hamil: Menyamankan Kehamilan, Mempermudah Persalinan. Yogyakarta: Lintang Pustaka; 2004.
- 11) Wulandari P. Pengaruh Prenatal Yoga Terhadap Tingkat Kecemasan Ibu Primigravida Trimester II dan III. Journal UMM. 2018;9(1).
- 12) Kemenkes RI. Profil Kesehatan Indonesia 2018. Jakarta: Kemenkes RI; 2018.
- 13) Bobak. Buku Ajar Keperawatan Maternitas. Jakarta: EGC; 2004.
- 14) Almasyhur. Pengaruh senam hamil yoga terhadap kekuatan otot dasar panggul. Makasar: UNHAS; 2010.
- 15) Oxorn HF, William R. Ilmu Kebidanan: Fisiologi dan Patologi Persalinan. Jakarta: Yayasan Essentia Medika.Mochtar, 2001.
- 16) Pratignyo T. Yoga Ibu Hamil plus Postnatal Yoga. Jakarta: Pustaka Bunda; 2014.
- 17) Husin, Farid. Asuhan Kehamilan Berbasis Bukti. Jakarta: Sagung Seto; 2013.
- 18) Sri Wahyuni. Pengaruh Senam Hamil Terhadap Proses Persalinan Pada Primigravida di RSIA Aisiyiah Klaten. MOTORIK (Jurnal Ilmu Kesehatan); 2013.

The Influence of Tata Gym on the Progress and Pain of Labor

- 19) Simamora. Faktor-faktor yang berhubungan dengan kecemasan persalinan Stage I pada Ibu bersalin di Klinik Sari Medan tahun 2010. Medan: Universitas Sumatera Utara; 2010.
- 20) Annisa. Perbedaan SStage Nyeri Stage I dan Durasi Stage II Persalinan Pada PrimiGravida dengan Senam dan Yoga Kehamilan. Yogyakarta: Poltekkes Kemenkes Yogyakarta Jurusan Kebidanan; 2017.



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The Effect of Small Sided Game Training on Passing Accuracy and Dribbling Ability in 10 Years-Old Junior Soccer Players



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ABSTRACT: This study aims to determine the effect of small-sided game training on the accuracy of passing and dribbling skills in 10 years old junior soccer players. This study uses an experimental method that uses a qualitative approach, with a one-group pre-test post-test design. The subjects of this study were 30 junior soccer players aged 10 years old. The instrument used to measure passing accuracy and dribbling ability is a basic soccer ability test. Data analysis in this study used a t-test with a significant value of 0.05. The dribbling data hypothesis test uses the paired t-test, while the passing data uses the Wilcoxon test. The results of the descriptive analysis showed that there was a significant effect of small sided game training on improving the dribbling abilities of junior soccer players ($p = 0.000 < 0.05$). The results of the Wilcoxon test on passing data showed that small sided game training also had a significant effect on improving the passing abilities of junior soccer players ($p = 0.000 < 0.05$) as indicated by the N value in the positive ranks of 30, which means that all research subjects experienced an increase. Knowing the descriptive results and testing the hypothesis, it was concluded that the application of small sided game training during training was very efficient in improving basic soccer technical skills, especially passing and dribbling. Small sided game practice has a far greater impact on a player's technical and tactical development than normal play. Players experience more touches on the ball and more learning moments in small sided games compared to normal games.

KEYWORDS: training effect, small sided game, passing technique, dribbling technique, soccer.

I. INTRODUCTION

Soccer is a sport that involves various ways of processing the ball with the feet to score goals. Modern soccer has experienced an exponential surge in the growth of sports science research aimed at improving sports performance over the past two decades (Dress, 2019). The application of this kind of research has undoubtedly made a significant and positive contribution to the development of professional soccer, but there are still many important aspects that have not been explored (Kirkendall, 2020). Rampinini et al (2009) report that a 'more successful' team completes more passes, successful passes, and shots on target than a 'less successful' team as determined by the results of match statistics. Furthermore, filettietal (2017) reports an increase in the probability of winning (125%) of teams with better performance in the skill efficiency index which consists of various technical aspects in the field.

An important factor that influences and is needed in the game of soccer is the basic technique. To play soccer well, players are introduced to good basic techniques. Players who have good basic techniques tend to be able to play soccer well too. Mastery of basic techniques is an important requirement that must be owned by every player so that the game can be done well. Even the former coach of Barcelona, Johan Cryuff said, "that the formation of players mostly occurs before the child is 14 years old" (Scheunemann, 2008: 24).

Technical skills such as passing, first touch and dribbling make up half of all individual actions taken in the game (Thomas, Fellingham, 2009:108-121) with research results showing teams that maintain ball possession are more likely to win the game (Larkin, 2013:17). Therefore, great importance is placed on the technical abilities of players, with many studies showing that technical skills differentiate youth soccer performance (Lago-Peñas, Dellal, 2010: 93). Researchers have found players who progress to the elite professional level are more technically competent for skills such as ball control, dribbling speed, and passing accuracy (Figueiredo et al., 2009: 883).

The age group soccer development program should be able to produce players who are useful for the club and as the development of athletes who will play for the national team at a higher level. This can be achieved through well-organized and structured soccer development programs.

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Improving youth soccer development has long been seen as an important factor for countries to become competent at the international level. Coaching must start early, young age is a very decisive phase towards achieving optimal quality performance. Talented young athletes need to be processed with a scientific coaching process, then the maximum possible athlete achievements appear at certain ages.

Indonesia is one of the countries that has played an active role in developing this prestigious sports game. This is evidenced by the many soccer school coaching that almost flooded every corner of this country. Soccer coaching at a very young age has a lot of things to pay attention to.

Fostering soccer from an early age is indeed the key to success in producing reliable soccer players in the future. Youth development must be carried out correctly, honestly and according to the stages, adequate infrastructure, quality training are important factors to support the process of developing early soccer, coaching must be serious and not instantaneous as well as with the correct coaching and training program, so that in adults can become reliable players in national and international events. For this reason, the role of the soccer school really needs to be considered in determining the training program.

One of the most important elements that must be emphasized in this training is the ability to carry out basic soccer movements in a balanced manner. Small sided games are a training method by presenting game situations like real games which make players gain mastery of technical, tactical, and physical aspects (Bondarev, 2011: 115).

In this study, small sided games are considered appropriate to improve basic techniques so that players have good basic technical skills. The small sided games training method is a method developed for young players so they can learn and develop. This game is specifically designed to display the best abilities of the players in real match situations, children's understanding of the importance of teamwork, correct positioning, and children's decision making will develop rapidly (Charles & Rools, 2012: 108). Each game is a combination of techniques in soccer, for example dribbling and passing the ball, or focusing on teamwork.

Study participants

The subjects of this study were 30 children at the soccer academy aged 10 years. This research is experimental research using a qualitative approach. Experimental research is a research method used to find the effect of certain treatments on others under controlled conditions. The design used in this study was a one-group pre-test and post-test design, namely a research design that was given a pre-test to find out the initial conditions before being given treatment and a post-test to find out the conditions after being given treatment (Sugiyono, 2013: 110).

Study organization

Participants must fill in the attendance list in one practice session. Participant attendance must reach 80% within 6 weeks of training. The first step in this study was to pre-test 30 children using an assessment of basic soccer technique skills. Pre-test to determine the initial state before being given treatment and post-test to determine the state after being given treatment.

The instruments or measuring instruments used in this study were passing accuracy tests and short dribbling tests (Bangsbo & Mohr, 2012:99-100). Tests to measure passing accuracy adapted from the Suparjo soccer passing test with a validity of 0.963 and a reliability of 0.900 were given at the beginning and end of the research process. The form of the test is as follows:

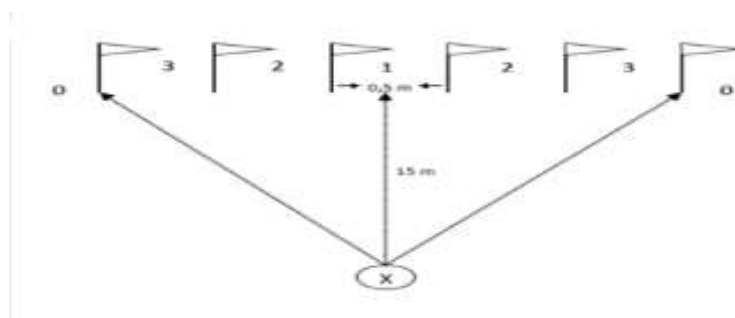


Figure 1. The form of the initial and final test for passing accuracy

The test to measure dribbling ability adapted from the zig-zag dribbling test with a validity of 0.723 and a reliability of 0.610 was given at the beginning and end of the research process. The form of the test is as follows:

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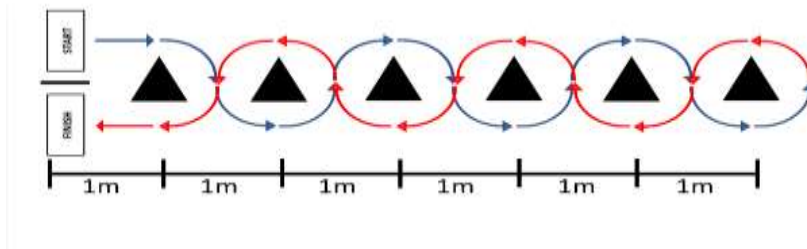
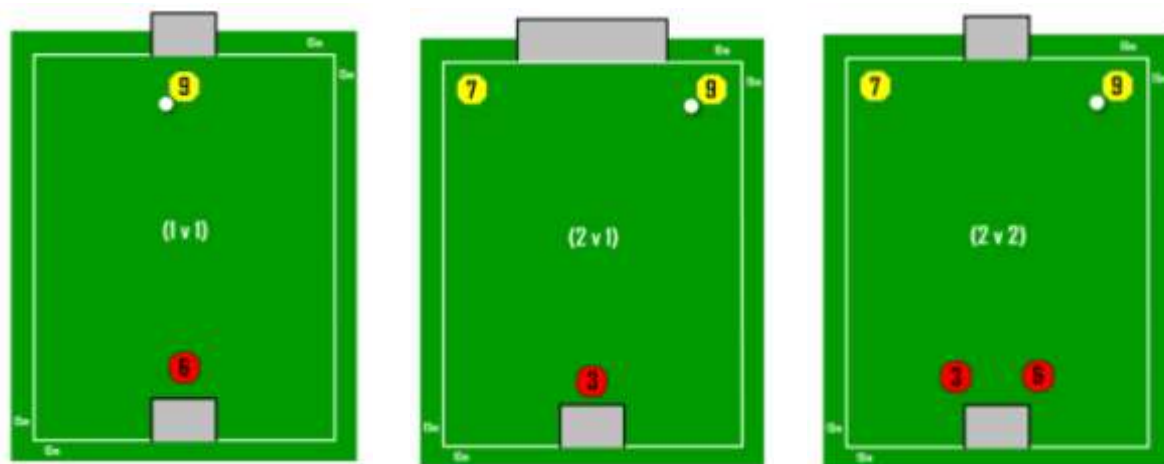


Figure 2. Forms of the initial and final dribbling tests

The collected data are the pre-test data obtained from the passing accuracy test and the short dribbling test, the best value is taken before the sample is given treatment, and the post-test data is obtained from the passing accuracy test and the short dribbling test with the best value taken after the sample has received treatment in the form of small sided exercises. games with a frequency of 3 times per week for 6 weeks, then at the last meeting all samples carried out a post-test of passing and dribbling techniques.

The procedure for implementing the small sided game training material



The trainer divides the playing field into 4 areas with a size of 10m x 15m, then the sample is divided into 4 groups randomly and carries out the exercise material according to the trainer's directions. In one training session there will be 3 stages, namely small sided game 1v1, 2v1 and 2v2 training.

The sample runs the training material alternately as the attacking team and the defending team with duration of 15-30 seconds. In 1v1 situations players are required to be able to score goals by dribbling past opponents. After all the samples are finished, the next material is 2v1 where players are required to be able to score goals by passing and dribbling to work together, while the defending team can grab the ball and do dribbling to get past the opponent. The last material in each training session is 2v2, each team will take turns playing together in attack and defence with passing and dribbling techniques to be able to score goals.

DATA ANALYSIS TECHNIQUE

Because this study uses an experimental method regarding causal relationships, the data analysis in this study is by comparing the pre-test and post-test results data after treatment. From the research data obtained, followed by analysing the data, then conclusions were drawn using non-parametric statistics using the SPSS 26 program. In this study, the data analysis used was the t-test with a significant value of 0.05. If the value of t count < t table, then H_0 is accepted.

RESULTS

The results of the descriptive statistics for each group are presented in table 1. The normality test shows that the dribbling data ($p = 0.200 > 0.05$), while the passing data is not normally distributed ($p = 0.010 < 0.05$). Therefore, to test the hypothesis of dribbling data using the paired t test, while for passing data using the Wilcoxon test. Table 2 shows that small sided game training has a significant effect on improving the dribbling ability of junior soccer players ($p = 0.000 < 0.05$). The passing data is not normally distributed so the mean difference hypothesis test uses the Wilcoxon test. The results of the Wilcoxon test on passing data showed

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that small sided game training had a significant effect on improving the passing abilities of junior soccer players ($p = 0.000 < 0.05$) as indicated by the N value in the positive ranks of 30, which means that all research subjects experienced an increase in the mean. The Wilcoxon test results can be seen in table 3.

Table 1.

Variabel	Pretest M (SD)	Posttest M (SD)
Passing	5.800 (0.245)	12.133 (0.185)
Dribbling	16.0130 (0.200)	14.8023 (0.200)

Table 2. Paired samples test

Variabel	Pretest – Posttest dribbling M (SD)	t	p
Dribbling	6.333 (0.35)	14.932	.000

Table 3. Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks	P. Value
POST-PASSING PASSING	PRE-	Negative Ranks	0 ^a	.00	.00
		Positive Ranks	30 ^b	15.50	465.00
		Ties	0 ^c		
		P. Value			.000

DISCUSSION

This research was conducted for 6 weeks in line with Harsono's opinion (2017: 14) that technical efficiency after 6 weeks of training is aimed at physiological-psychological regeneration of the central nervous system to determine the development of the training process. The application of small sided game training during training is very efficient in improving basic soccer technical skills. Basic technical skills are very important for every player to support performance during the game.

Small sided game is a training program that resembles a match but with a smaller number of players. This training program takes place on a smaller area compared to a normal soccer match. Small spaces and fewer players allow coaches to focus on specific skills as well as giving all players ample opportunity to participate. In the small sided game, one team is in charge of passing and receiving pressure while their opponent will press as the attacking team and try to score goals.

As a dynamic passing exercise can be integrated into possession-based drills with more engaging activities for players. In a small side game training program, the focus should be on mastering the basic techniques and their application to the game.

At a young age the training material focuses on smaller areas and fast passing patterns so that it trains players on many types of passes to make soccer players with good passing quality. Small sided games are more complex and positional games in which players can execute their passing skills in a simulated match. The small sided game training material allows players to do a lot of passing, forcing players to make quick decisions under pressure to maintain ball possession and still produce quality chances at goal with quality passes. This shows that small sided game training can improve passing skills in soccer.

The small side game training material is designed to improve the passing and dribbling abilities of soccer players, by creating 1v1, 2v1 and 2v2 situations so that players develop their passing and dribbling techniques with close control, touch quality, passing accuracy and attacking skills in the form of dribbling speed. Players are encouraged to dribble with good quality dribbling techniques and are confident to attack and pass opponents. This shows that small side game practice can have a significant effect on improving basic dribbling technical skills in soccer.

CONCLUSION

This systematic review revealed the significant and beneficial effects of using SSG training interventions to improve technical execution. After discussion of finding, it can be concluded that there is a significant positive effect of six weeks small sided games on the improvement of technical execution passing and dribbling of junior soccer players.

From the discussion above, it is explained that small sided game training has a far greater impact on players' technical and tactical development than normal games. Players experience more touches on the ball and more learning moments in small sided games compared to normal games.

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Small sided games are more conducive to long-term technical and tactical development because they can provide a foundation of skills that can be transferred from team to team and from level to level.

ACKNOWLEDGMENTS

The authors would like to thank Yogyakarta State University, the trainers, Yogyakarta soccer academy athletes and all those who have assisted in this research. With their help, this research can be completed optimally

Conflicts of Interest:

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

REFERENCES

- 1) Arslan, E., Orer, G., and Clemente, F. (2020). Running-based high-intensity interval training vs. small-sided game training programs: effects on the physical performance, psychophysiological responses and technical skills in young soccer players. *Biol. Sport* 37, 165–173. doi: 10.5114/biolSport.2020.94237
- 2) Bujalance-Moreno, P.; Latorre-Román, P.Á.; García-Pinillos, F. (2019) A Systematic Review on Small-Sided Games in Soccer Players: Acute and Chronic Adaptations. *J. Sports Sci.* 37, 921–949.
- 3) Caso, S., and van der Kamp, J. (2020). Variability and creativity in small-sided conditioned games among elite soccer players. *Psychol. Sport Exerc.* 48:101645. doi: 10.1016/j.psychsport.2019.101645
- 4) Clemente, F. M., Afonso, J., Castillo, D., Arcos, A. L., Silva, A. F., and Sarmiento, H. (2020). The effects of small-sided soccer games on tactical behavior and collective dynamics: a systematic review. *Chaos Solitons Fractals* 134:109710. doi: 10.1016/j.chaos.2020.109710
- 5) Clemente, F. M., and Sarmiento, H. (2020). The effects of small-sided soccer games on technical actions and skills: a systematic review. *Hum. Mov.* 21, 100–119. doi: 10.5114/hm.2020.93014
- 6) Dellal, a., owen, a., wong, d. P., krustrup, p., van exsel, m., mallo, j., 2012. Technical and physical demands of small vs. Large sided games in relation to playing position in elite soccer. *Human movement science.* 31(4), 957–969
- 7) Fenner JS, Iga J, Unnithan V (2016) The evaluation of small-sided games as a talent identification tool in highly trained prepubertal soccer players. *Journal of Sports Sciences* 34(20): 1983-1990.
- 8) Fiorilli, G., Mitrotasios, M., Iuliano, E., Pistone, E.M., Aquino, G., & Calcagno, G. (2017). Agility and change of direction in soccer: differences according to the player ages. *Journal of Sports Medicine and Physical Fitness*, 57, 1597-1604.
- 9) Garganta J, Santos R, Da Costa IT (2014) Comparison of tactical behavior and performance of youth soccer players in 3v3 and 5v5 small-sided games. *International Journal of Performance Analysis in Sport* 14(4): 801-813
- 10) Gomez-Carmona, C. D., Gamonales, J. M., Pino-Ortega, J., and Ibanez, S. J. (2018). Comparative analysis of load profile between small-sided games and official matches in youth soccer players. *Sport.* (Basel, Switzerland) 6:6040173. doi: 10.3390/sports6040173
- 11) Halouani, J., Chtourou, H., Dellal, A., Chaouachi, A., & Chamari, K. (2017). Soccer small-sided games in young players: rule modification to induce higher physiological responses. *Biology of sport*, 34(2), 163.
- 12) Jamshad, M., & Praveen, A. (2017). Effect of Small Sided Games on selected physical and performance related variables among young soccer players. *International Journal of Physical Education, Sports and Health*, 4(3), 450–453.
- 13) Joo, c. H., hwang-bo, k., jee, h., 2016. Technical and physical activities of small-sided games in young korean soccer players. *Journal of strength and conditioning research.* (vol. 30). <https://doi.org/10.1519/jsc.0000000000001319>.
- 14) Khurrohman, M. F., Marhaendro, A. S. D., Festiawan, R., & Hidayat, R. (2021). Small-sided games: alternative exercise to improve cognitive performance of youth futsal players. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, 7(1), 37–50.
- 15) Kumak, A.; Kizilet, A.; Bodogan, T.K. (2021) Exploration of the Effect of Small Sided Games on the Technical Skills, Internal and External Loads of Main and Joker Players. *Prog. Nutr.* 23, e2021207.
- 16) Praça, G. M. M., Soares, V. V. O. V., Matias, C. J. A. S., Costa, I. T., Greco, P. J. J., da Costa, I. T., et al. (2015). Relationship between tactical and technical performance in youth soccer players. *Rev. Bras. Cineantropometria e Desempenho Hum.* 17, 136–144. doi: 10.5007/1980-0037.2015v17n2p136
- 17) Radziminski, I., rompa, p., barnat, w., dargiewicz, r., jastrzebski, z., 2013. A comparison of the physiological and technical effects of high-intensity running and small-sided games in young soccer players. *Int j sports sci coach.* 8(3), 455–465. <https://doi.org/10.1260/1747-9541.8.3.455>.

The Effect of Small Sided Game Training on Passing Accuracy and Dribbling Ability in 10 Years-Old Junior Soccer Players

- 18) Rampinini, E., Impellizzeri, F., Castagna, D., Abt, G.A., Chamari, K.Sassi, A. and Marcora, M. (2007). Factors influencing physiological responses to smallsided soccer games. *Journal of Sports Sciences* 25, 659-666.
- 19) Sannicandro I, Cofano G (2017) Small-sided games in young soccer players: Physical and technical variables. *MOJ Sports Medicine* 1(1): 1-4.
- 20) Sarmiento, H., Clemente, F. M., Harper, L. D., Teoldo, I., Owen, A., Figueiredo, A. J., et al. (2018). Small sided games in soccer—a systematic review. *Int. J. Perform. Anal. Sport* 00, 1–57. doi: 10.1080/24748668.2018.1517288



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Utilization of the Social Security Administrative Body (Bpjs) for Hormonal Contraception Participation



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ABSTRACT: The Social Assurance Organizing Agency (BPJS) makes more easy people provide health provider, such as to increase resilience and welfare of the family planning family planning acceptors of PUS. Banten Province has an unmet need rate (6%) from the national average. For discontinuation of contraceptive use, Banten Province reached below 20%, namely 19.5%. For this reason, it is necessary to motivate health workers to family planning acceptors in the use of BPJS for the participation of hormonal contraception. The goal of this research was analyze the relationship between the benefit of BPJS with the participation of contraceptive pills, injections 1 and 3 months. The research method is descriptive analysis with a questionnaire instrument. The research design used is cross. sectional analysis of the results using chi square. One of the reasons for the high number of unmet needs is the health workforce, namely the lack of counseling and providing information from health workers which causes the client's lack of knowledge in choosing the type of contraception. Suggestions in the future for the participation of midwives in independent practice with BPJS in providing IUD and implant contraceptive services.

KEYWORDS: BPJS, participation, contraception, hormones.

I. INTRODUCTION

One of the efforts to reduce maternal mortality is the Family Planning (KB) program. The achievements of the family planning program in Indonesia have been relatively stagnant. The use of contraception by couples of childbearing age has increased, reaching 64%, but the unmet need for family planning in the last two decades has not changed, namely 11%, and the contraceptive drop-out rate has continued to increase, currently reaching 29%.

The National Health Insurance (JKN) is one of the government's health service efforts that is managed by the Social Security Administration Agency (BPJS) Health and BPJS Employment and the system uses an insurance system².

All Indonesian people have many opportunities to maintain their health so that they are always protected. This can be done by saving a little of the material, so that she too can become a participant and benefit from it, including for prenatal check-ups (antenatal), delivery (normal) and postpartum check-ups and for couples of childbearing age (PUS) who will become KB acceptors³.

Government program to provide convenience in obtaining health services performed by health workers, so as to reduce maternal mortality and infant mortality rates. According to the Health Law No. 36 of 2009 that family planning is part of the implementation of health efforts, the government is obliged to guarantee the availability of information facilities and reproductive health services that are safe, of good quality and affordable to the community, including family planning. Health services in family planning are intended to regulate pregnancy for husband and wife aged fertile ground to produce healthy and superior next generations and the state is obliged to provide implementers, places, equipment and medicines to serve the community in family planning that is protected, of good quality and accessible to many people. Inviting cross-sectoral efforts to improve family planning services to prepare for the lives of adolescents, namely fulfilling reproductive rights, increasing PUS acceptors for prosperous families⁴.

The BKKBN revealed that in March 2020 the use of family planning decreased greatly compared to February 2020. Throughout Indonesia there was a decrease in the use of family planning, namely 35% - 47%, which could impact on an increase in the number of unplanned pregnancies by 15% in 2021⁵.

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Banten province has an unmet need rate (6%) of the national average. The dropout rate for contraception in Banten province is below 20%, namely 19.5%. For this reason, counseling is very important for family planning acceptors to take advantage of BPJS for family planning. The purpose of this study was to analyze the relationship between BPJS utilization and participation in hormonal contraception pills, injections for 1 and 3 months.

II. METHOD

The research design is quantitative with a cross sectional approach. The sample was 81 PUS from 3 Community Health Centers in Lebak Banten District. This research was conducted at the Mandala and Cibadak Health Centers, Lebak Regency, Banten from May to July 2021. Data was collected using a questionnaire, which is in the form of closed questions to respondents about age, religion, education, employment and BPJS utilization. Data were analyzed by chi-square.

III. RESULTS

Table 1. Age, Education, Occupation of Respondents and Utilization of BPJS

Characteristics	n	Percentage	n
Age :			
< 35	55	67.9	81
> 35	26	32.1	
Religion :			
Islamic	81	100.0	81
Education :			
SD	27	33.3	81
SLTP	29	35.8	
SLTA	25	30.9	
Work :			
Yes	6	75.4	81
No	75	92.6	
KB Type :			
Pill	22	27.2	81
Injection 1 month	38	46.9	
Injection 3 months	21	25.9	
Biaya BPJS :			
Yes	72	88.9	81
No	9	11.1	

Based on Table 1, it shows that most of the respondents were <35 years old, all respondents were Muslim, most graduated from junior high school and did not work, the majority used 1 month injection contraception and had BPJS.

Table 2. Relationship between Respondent Characteristics and Participation in Hormonal Contraception

Variable	Hormonal Contraception			p value
	Pill n (%)	Injection 1 month n (%)	Injection 3 months n (%)	
Age :				
<35	12 (21.8)	27 (49.1)	26 (29.1)	0.26
>35	10 (38.5)	11 (42.3)	5 (19.2)	
Education :				
SD	9 (33.3)	12 (44.4)	6 (22.2)	0.87
SLTP	7 (24.1)	13 (44.8)	9 (31.0)	
SLTA	6 (24.1)	13 (52.0)	6 (24.0)	
Work :				
Yes	2 (33.3)	2 (33.3)	2 (33.3)	0.78
No	20 (26.7)	36 (48.0)	19 (25.3)	

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Based on table 2, the results of the analysis found that there was no relationship between the characteristics of the respondents based on age, education and work and the participation of hormonal contraception.

Table 3. The Relationship between Use of Hormonal Contraception and Utilization of BPJS

KB Type	BPJS Fees		p Value
	No	Yes	
Pill	18 (81.8)	4 (18.2)	0.01
Injection 1 month	34 (89.5)	4 (10.5)	
Injection 3 months	20 (95.2)	1 (4.8)	

Based on table 3, the results of the analysis found that there was a relationship between participation in the contraceptive pill, injecting 1 and 3 months with a P value <0.05

IV. DISCUSSION

Age is a time of new life sequences and demands. If a person gets older, his knowledge will also increase. Based on research by Anita et al (2014) in Talud District, respondents who were over 30 years of age tended to choose long-term contraceptive methods⁶. These results differ from research conducted by Mahmudah & Fitri (2015) which was conducted in Banyubiru District, Semarang Regency, where there was no significant effect between age and the choice of long-term contraceptive methods⁷.

The education level of the respondents indicated that most users of hormonal contraception had junior high school education. The results of the multivariate analysis found that there was no significant effect between the last educational level of PUS on the low MKJP participation.

This illustrates the dissimilarity with the opinion of Mantra (2012: 167) which states that "the factors that influence the level of fertility are divided into two factors, namely demographic and non-demographic factors. Demographic factors include age structure, marriage structure, age at first marriage, parity. While non-demographic factors include the economic condition of the population, education level, improvement of women's status, urbanization and industrialization. Thus the level of education is one of the non-demographic factors related to the knowledge of PUS about the benefits of birth control which can reduce fertility rates and improve the quality of the population⁸.

The level of education greatly influences a person to act and seek causes and solutions in his life. Educated people are more receptive to new ideas. Education is the process of conveying knowledge materials/tories to people who will be educated to change behavior and goals. According to Oemar Hamalik (2011), learning is the process of changing individual behavior through interaction with the environment⁹. According to Yulizawati (2012) there was no effect between the respondent's education and long-term contraceptive use¹⁰. Education is an effort to develop personality and abilities inside and outside of school and lasts a lifetime. Education affects the learning process, the higher a person's education the easier it is for that person to receive information¹¹.

Government intervention, especially the BKKBN for the empowerment of family planning participants, does not need to differentiate PUS in terms of educational characteristics. Provision of health education about family planning to the public by the government, either through the mass media widely, or personally to groups of couples of childbearing age provides a wide opportunity for them to obtain information about family planning. The ease of information about family planning has an impact on the public's knowledge about family planning which is relatively even in all educational groups, so that their behavior towards family planning in terms of education is relatively even¹².

Utilization of national health insurance is a determinant of a person's participation in becoming a family planning acceptor. According to Wagstaff, health policies at the macro and micro levels must be implemented through the health system which consists of the health service sector and health financing. The health sector must pay attention to availability, accessibility, price and quality. One of the government policies that affects the availability of married couples to participate in the family planning program is Jampersal, which is a financial guarantee that is used for prenatal care, delivery assistance, postpartum services including postpartum family planning and newborn services¹³.

According to Prabhaswari's research (2012) maternity insurance has an effect on family planning participation after considering the level of knowledge with a p of 0.010. This could be due to the maternity insurance program after giving birth holding advocacy and KIE for family planning services in Jampersal on an ongoing basis so that the respondent's knowledge of family planning increases and the respondent understands the benefits of family planning. In addition, it is very important that a

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person's level of knowledge is a foundation for behavior and actions that follow or not, so that a good level of knowledge about family planning in all its aspects will greatly help the smooth running of efforts to motivate prospective family planning acceptors¹⁴.

This statement is the same as research by Amalina et al (2015) which found that the level of knowledge of JKN among Contribution Recipient Recipients (PBI) participants was obtained by 74.0 percent of respondents who had less knowledge, while PBI participants who had good knowledge were only 8.0 percent. For non-JKN PBI participants, there were 3 percent of respondents with less knowledge, while 80.0 percent of respondents who had good knowledge. This means that the level of knowledge of the majority of PBI participants is still lacking¹⁵.

Based on the level of knowledge of the JKN program, the results of research from Sastradimulya et al. (2015) found that as many as 45 people (37.5%) had a level of knowledge in the good category. Furthermore, based on membership status, research results from Sastradimulya et al., (2015) found that 56.7 percent of respondents had participated in the JKN program. This is because respondents at the Majalaya Health Center already know information related to JKN through the Jamkesmas program and socialization by the BPJS at the Majalaya Health Center¹⁶.

Participation in Community Health Insurance influences the decision making as a family planning acceptor, because on the one hand Jamkesmas finances free births which can cause people's indifference to family planning while on the other hand there is also a free family planning program. However, in practice the two programs have not been implemented comprehensively.

V. CONCLUSION

Most of the respondents were <35 years old, all respondents were Muslim, most graduated from junior high school and did not work, the majority used 1 month injection contraception and had BPJS. There is a relationship between the use of BPJS and the participation of hormonal contraception at the Lebak Banten Health Center in 2021. BPJS is very helpful in family planning programs, so it is necessary to further study how the use of BPJS for long-term and steady use of contraception.

VI. ACKNOWLEDGMENT

The researcher would like to thank various parties who have participated and helped from the beginning to the end of this research process including the leadership elements of the Jakarta I Poltekkes, the Head of the Center and the Head of the Research and Community Service Institute institutions as research partners.

REFERENCES

- 1) BKKBN, BPS, Kemenkes & I. Survei Demografi dan Kesehatan Indonesia 2017. 2018.
- 2) Yustisia TP. Panduan Resmi Memperoleh Jaminan Kesehatan dari BPJS. Jakarta: Visi Media; 2014.
- 3) RI K. Profil Kesehatan Republik Indonesia. Jakarta; 2015.
- 4) Undang-Undang Nomor 36 Tahun 2009 Tentang Kesehatan (Lembaran Negara Republik Indonesia Nomor 144 Tahun 2009, Tambahan Lembaran Negara Rpublik Indonesia Nomor 5072.
- 5) Handayani I. Pelayanan KB di Era New Normal. 2020.
- 6) Lontaan, A. kusmiyati dompas. R. Faktor-Faktor Yang Berhubungan Dengan Pemilihan Kontrasepsi Pasangan Usia Subur Di Puskesmas Damau Kabupaten Talaud. *J Ilm Bidan*. 2014;2(1):91154.
- 7) Nur Mahmudah LT. Analisis Faktor Yang Berhubungan Dengan Pemilihan Metode Kontrasepsi Jangka Panjang (Mkjp) Pada Akseptor Kb Wanita Di Kecamatan Banyubiru Kabupaten Semarang. *Unnes J Public Heal*. 2015;4(3):76–85.
- 8) Mantra IB. Demografi Umum. Yogyakarta: Pustaka Pelajar; 2012.
- 9) Hamalik O. Proses Belajar Mengajar. Jakarta: PT Bumi Aksara; 2011.
- 10) Yulizawati. Analisis Faktor yang Berhubungan dengan Peningkatan Penggunaan Alat Kontrasepsi Dalam Rahim (AKDR). *J Ilm Kebidanan*. 2012;Vol.3 No.2.
- 11) Haryanto. Pengertian Pendidikan Menurut Para Ahli. 2012.
- 12) Prasetyo T. Analisis Faktor yang Mempengaruhi PUS Mengikuti Keluarga Berencana di Wilayah Kerja Puskesmas Sambirejo Kabupaten Sragen Universitas Muhammadiyah Surakarta. Universitas Muhammadiyah Surakarta; 2013.
- 13) Wagstaff. Hubungan Kesehatan dan Kemiskinan. 2013. Report No.: 49–57.
- 14) Prabhaswari YH. Pengaruh jaminan persalinan terhadap keikutsertaa keluarga berencana. Semarang : Universitas Diponegoro; 2012.
- 15) Amalina, R., Respati, T. B. Tingkat pengetahuan Jaminan Kesehatan Nasional Peserta Badan Penyelenggara Jaminan Sosial Kesehatan di Puskesmas Plered Kabupaten Purwakarta tahun 2015. In: Pendidikan Dokter. 2015. p. 02, 1086–91.

Utilization of the Social Security Administrative Body (Bpjs) for Hormonal Contraception Participation

- 16) Sastradimulya, F., Nurhayati, E., Susanti Y. Hubungan tingkat pengetahuan pasien tentang Jaminan Kesehatan Nasional dengan status kepesertaan BPJS. In: Prosiding Pendidikan Dokter. 2015. p. 02, 578–83.



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Ave Satani Motifs Relation to Narrative Thematic Development of the Omen: An Analysis of Oscar-Winning Horror Film Music



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ABSTRACT: It is noteworthy to distinguish the excellence of Ave Satani's theme song for The Omen (1976) film so that it becomes the only horror movie that ever won a nomination for "Best Original Song" over the ninety years of the Academy Awards (NIS, 2022). If we consider the song as non-diegetic that only appeared in the opening and ending credits, was it true that it did not relate to the film scenes? This study aims to analyze the musicological characteristics of the song and find its role within the film's scenes. This study uses the qualitative method with analytical approaches using musicological analysis and qualitative triangulation through interviews with three Indonesian film music experts. The results of this study are findings of Ave Satani's musical song form and the development of its main and auxiliary motives. This study concludes that, in addition to serving as the film's opening and closing credits illustrations, the song strengthens the antagonistic atmosphere between the church and the devil. However, as a theme song, Ave Satani's motives have been modified and developed into soundtrack music for essential scenes within the film. The study contributes basic knowledge for further study of the film music to clarify its theme song motives transformation into the other illustration songs of film scenes.

KEYWORDS: Ave Satani; music analysis; film music; theme song; horror film

I. INTRODUCTION

This paper discusses the musicological analysis of the horror film theme song of The Omen (1976), which won a nomination for Best Original Song at the Academy Awards, also known as the Oscars, for the authenticity of best film musical composition. The Best Original Song is one of the 25 nominee categories in the Oscar awards. The Academy Awards have been held annually since 1929 at Hollywood Roosevelt Hotel (Bailey, 2021). Among other similar awards, such as the Grammy Awards, Tony Awards, and Emmy Awards, the Academy Awards are the most prestigious globally.

The winners of Best Original Song nominations in the last three years, from 2019 up to 2021 were in the category of biographical drama films and musical romantic drama films. The three winning songs were: 1) Shallow by Lady Gaga, Anthony Rossomando and Andrew Wyatt for the musical romantic drama film, A Star is Born (2018), directed by Bradly Cooper at the 91st Oscars 2019; 2) (I'm Going to) Love Me Again by Elton John and Bernie Taupin, for the biographical musical fantasy drama film, Rocketman (2019), directed by Dexter Fletcher, at the 92nd Oscars 2020, and 3) Fight for you by H.E.R., Dernst Emile II, and Tiara Thomas, for biographical drama film, Judas and the Black Messiah (2021), with director Shaka King at the 93rd Oscar 2021 (Oscar.org., 2021).

The Best Original Song nomination refers to the film's theme song. The theme song is one of the aspects that influenced the development of the horror film market share. According to Nash Information Services (NIS), the market share of horror films has increased dramatically from 4.26% in 2016 to 9.46% in 2017. Nevertheless, up to the middle of 2018, the market share of horror films slumped to 5.28% (NIS, 2021). In 2017 the market share of horror films displayed a high position. At that time, two horror films achieved several nominations and an Academy Award trophy. The first films were Get Out (2017) for the "Best Performance by Actor in a Leading Role," "Best Achievement in Directing," "Best Motion Picture of the Year," and the "Best Original Screenplay" Nominations. The second film was The Shape of Water (2017) for "Best Original Score" and nine other nominations, including "Best Sound Editing" and "Best Sound Mixing" (Chakravorty, 2018). These data clarify that the achievement in various aspects in a movie affects the growth in horror movies' market share.

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After over 93 years, up to 2021, only 38 horror films have been nominated for Oscars (Oscar.org., 2021). Of these, only one horror film has ever received a nomination for Best Original Score. The nominated movie was *The Omen*, directed by Richard Donner, with Goldsmith's *Ave Satani* in the category of Best Original Song (see Carden, 2018; Jacobs, 2018; Woodard, 2018). Following the success of *The Omen*'s first screening in 1976 as the most popular paranoid horror film, its original theme song and composer also became popular (Vallerand, 1993; Lysy, 2018; Woodard, 2018).

In connection with the fact that the only horror film theme song received a Best Original Song nomination, one can assume that *Ave Satani* must have its own unique musical characteristics compared to the other horror film theme songs. This study attempts to analyse the musicological features of the *Ave Satani* songs to understand their musical quality as an Academy Awards nomination winner

A. Music and the Academy Awards

There are few studies of music related to the Academy Awards at this time. Existing studies have critically discussed the process and methods of assessing category nominations and analyzing the competition results (Kim et al., 2021; McCullough & Conway, 2018). Kim et al. (2021) uncovered the process of assessing a film's public perception as an indicator of the mechanism for determining Oscar nominations through social networking platforms with a topic-oriented method. McCullough et al. (2018) conducted two comparative studies among films that won and lost their nominated Academy Award seasons. The first study randomized five years of awarding between 1950 and 2015 on Best Picture and Original Screenplay nominations. In the second study, he compared the two categories with various other categories for the Academy Awards, Golden Globes, and People's Choice Awards. The study's findings indicated that winning films scored lower than unsuccessful films for all three types of integrative complexity. He concluded that integrative complexity is feasible and can provide psychological insight into the film's quality assessment.

There are two studies on Academy Awards that tend to be film critics. Bishop (2020) conducted a narrative analysis of news coverage of the award-winning film *Academy Award Spotlight* from 2015 to 2016. His review focused on reporting journalists, film critics, and commentators evaluating *Spotlight* and the raising of journalism's issues. The research underlined the importance of investigative reporting writing in journalism and film criticism. However, Imanjaya et al. (2021) do not address his criticism of film production but the human attitude towards nature. The study conducted textual analysis against the three well-known South Korean films directed by Bong Joon-Ho, who raised issues of natural threats to the earth's future. The three film works he analyzed were *The Host* (2006), *Snowpiercer* (2013), and *Okja* (2016). All three films portrayed the threat of toxic chemical waste, genetically modified organisms (GMOs), animal cruelty, and the frozen earth resulting from global warming as an "ecological monster."

The Academy Award study by Asadpour & Shirouyehzad (2019) discusses film music concerning the Best Original Score category winner. However, the focus was on the methods of ranking achievement. It evaluated and ranked the recipients of the Best Original Score nominated for films from 1990 to 2016 by applying Data Envelopment Analysis (DEA). They ranked the composer as the (Decision Making Unit DMU) and concluded that Alan Mencken achieved the highest position, followed by John Williams and, lastly, Justin Hurwitz. Meanwhile, the established composer, Ennio Morricone, was ranked nineteenth. Nevertheless, the study aimed to test the validity of the DEA's mathematical model for ranking columns.

B. Horror Film Studies

A theme song in film music plays an essential role in Academy Award nominations. Horror film theme songs have rarely received the Best Original Song award, and there are no studies on music for horror films in the context of the Academy Awards. Analyses of horror film music have been done but rarely from a musicological approach. Musicological research might uncover the role of music in horror film production.

Recent film music studies were related to various contextual themes, such as business, psychology, socio-cultural, and nationalism. Former studies on film music discussed the sustainability of film music's business ecosystem. The reality of film music production systems concerned the media industry, market aspects, networks, and power relations in the film business). (Herbert et al., 2019; Sylvanus & Eze-Emaeyak, 2018). Besides business issues in the last five years, film music studies also deployed psychological theories. Steffens (2020) and Tan et al. (2017) discussed the role of music in influencing the audience's interpretation of scenes and moral judgment in the film's acceptance. In the context of socio-cultural studies, work on music films has discussed the identity issues concerning society and nationalism. McGuire (2018) (2018) addressed the theme song of Wong Fei-Hung's legendary Kungfu films as conveying the informal transnational national anthem of the Cantonese people. On the other side, Johan (2017) conducted an intertextual study between biographies and film scores to uncover the history of Malay nationalism. The study applied musicological analysis, particularly the breakdown of musical motifs and stylistic

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identification in Zubir Said's compositions for Hussein Hanniff's Dang Anom film. Intertextual analysis revealed the characteristics of the linkage of melodic construction with the contradictory aspirations of the post-colonial Malay nation. Other intertextual studies also addressed the boundaries between films and commercials through film soundtracks by analyzing musical elements (Palencia-Lefler, 2020).

With the invention of his serial system in musical composition, Arnold Schoenberg's music has an affinity with horror film illustrations. Horror film music observers should consider Schoenberg's music as one of the inspirations of horror film illustration musical style. Several of his melodramas, such as *Pierrot Lunaire* (1912) and *Erwartung* (1909), linked atonal effects with the psychological. The works intentionally avoid any motive or thematic development (knowns as the athematic). His innovations in serial music resulted in abstract works and controversial novelty dimensions that were perfect for horror films (Arnold, 2019; Cizmic, 2017; Keathley, 2010). Film music analysis by Hilewicz (2021) reviewed Schoenberg's musical work, which was explicitly published only for films entitled *Begleitungsmusik Zu Einer Lichtspielszene* ('Musical Accompaniment for a Film Scene'), Op. 34 (1929-30). This analysis proved that although the work was written not for a particular film scene, it is a potential cinematographic blueprint. He proved its interpretation through collaboration with filmmakers to make a film based on the analysis. The analytical visualizations could contribute to various interpretive approaches to allow concert listeners to connect music with analytical reading in real-time with their experiences.

Many horror film studies evoke a religious context and have social and religious impacts. Horror movies were so popular in Malaysia that they touched religious sensibilities. However, Islam did not dismiss the film as an artistic script that affected society. The Fatwa Council in Malaysia guided film production to meet Islamic lawsuits, and the Council conducted a content analysis on products related to film production. Although the fatwa for the film was significant, the Council itself rarely discussed it in the national forums (Opir et al., 2020).

The negative impact of horror films spawned open criticism from the United States Office of Catholic Bishops' Film and Broadcasting (USCCB-OFB), which stated that the film's mismatched for the public. However, reviews produced by priests and lay Catholics and correspondence with the Vatican indicated that the church interpreted it positively against the power of faith nationally. The positive interpretation stems from the research proving that horror movies express sadness behind the horror and tension. There were two claims of phenomenological communication of grief in horror films: 1) suitable to represent the experience of grief; 2) offers a set of sad experiences to provide psychological benefits for the mourner (Millar & Lee, 2021).

C. Statement of Problems

Horror film studies discuss its social impact on society but not the musical aspects. Even though there were musicological analyses of several film music, they did not textually reveal the quality of its music. Most of the studies were only part of the intertextual study of the elements within a film (Johan, 2017). Hilewicz's (2021) musicological studies did not examine music from film illustrations but a piece of music prepared for the film. Chełkowska-zacharewicz et al. (2020) did analyze melodic motifs from film music but not from the horror film genre.

The difference between our research with previous film music studies is its focus on the musicological analysis of a horror film associated with Academy Award winners. The goal of analyzing the Ave Satani song in this study is to reveal its musical style characteristics unique to distinguish musical excellence. Therefore, we would like to know, based on what musical structure and motif was the song Ave Satani designed? In addition, this study also questioned whether Ave Satani is a type of non-diegetic musical prologue. If not, then how the song supports the drama within the film scenes? The aim of answering the last question is to uncover Ave Satani's song role in *The Omen* film.

II. METHOD

This research is under the umbrella of musicology. Since 1955, the American Musicological Society (AMS, 2021) committee stated that this field's definition and scope is knowledge, which investigates music as a physical, psychological, aesthetic, and cultural phenomenon. This similar understanding of the meaning is also stated in musicological textbooks (Hooper, 2017), music dictionaries (Duckles et al., 2019), and by experts (Sullivan, 2019) (Sullivan, 2019). Several universities (Maddox, 2019; Murphy, 2019; Musicology, 2019) (Maddox, 2019; Murphy, 2019; Musicology, 2019) use this terminology for studies in Western music that relate to classical music (See Casagrande, 2019; Conklin, 2010; Miller-Kay, 2018).

The primary data of this study is Gerry Goldsmith's Ave Satani theme song in sound files, piano-vocal scores, and a film snippet of *The Omen* (1976). The sound file is a download material from the Spotify Android application platform (Spotify AB, 2021). We purchased the piano-vocal score version from the online store MusicNotes because it was the only website with the original score needed as material in the study. The arranger details of the piano-vocal score are not available in the PDF file. The

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composer himself probably made the arrangement. Warner-Tamerlane Publishing Corp. Copyrighted the score in 1976. However, according to the product information on the website, the publisher of this version is Alfred Publishing Co., Inc. (Musicnotes, 2021). Since the original orchestra's full score was unavailable in the online marketplace, the alternative approach was to transcribe the piece from the obtained audio files. We then asked a colleague, Joshua Eka Pramudya, to do the transcription. To estimate the full-score accuracy, we confirmed the transcription results with the sound files, vocal-piano score versions, and the Ave Satani songs extracted from the movie as the primary source. We then collected qualitative data from three Indonesian subjects: a film assessment lecturer, a film music practitioner, and a music composer.

This research processes data with musical form analysis. The utilization of musical form analysis is to understand the construction of a musical work, including its elements. Until now, studies on film music have conducted musical analysis contextually. Chełkowska-Zacharewicz & Paliga (2020) utilized motif analysis on seven music themes from The Lord of the Ring films. He then investigated which emotions and musical associations appeared in the respondents when listening to the musical motifs. The results showed a link between respondents' associations and the musical emotions they experienced with musical motif characteristics. Another film music analysis by Stock (2021) conducted a case study of foreign world development in movies using the world's music resources through Sci-Fi settings. The analysis was on the musical film of the TV series Battlestar Galactica: Blood and Chrome, Avatar, and the MMORPG video game World of Craft. He revealed three types of mashups that refer to world music materials in the Nuendo, integration, and creolization from this study.

Analytical studies of film music relate musical works within a film and link it to its audience (see Chełkowska-Zacharewicz & Paliga, 2020), while the other investigates the music contextually with world music elements in different films and media (see Stock, 2021) (Stock, 2021). This study is closer to the first but focuses on a theme song. An effort was attempted with the support of theories through literature studies and qualitative data through free interviews to obtain evidence of the musical role within the film (Björk et al., 2021; Kvalsvik & Øgaard, 2021; Ravn, 2022).

This research consisted of several stages. First, reduce the transcribed orchestral full score of Ave Satani to a piano score in treble and bass staves. Next, the main melody was separated from its accompaniment and analyzed for its general structure identification. After identifying the characteristics of the motifs, we compare them with the parts in the film that uses the song Ave Satani, namely, the opening and ending credits. However, to find out the song's contribution to the film scenes, we quickly tracked the existence of Ave Satani's modified motifs in the illustrated musical works that accompanies certain scenes. Finally, this study confirms the finding through literature studies and interviews with three relevant experts to establish confidence in the research conclusion.

III. RESULT

This musicological study produced The Omen film music analysis based on the general construction pattern of the Ave Satani theme song. Within the identified construct pattern, this research found that the song's musical characteristics were related to its role in The Omen film.

A. Musical Form

The entire document should be in Times New Roman or Times font. Type 3 fonts must not be used. Other font types may be used if needed for special purposes.

1. Prologue: The introduction appears in a prologue that contains a repetition of thematic statement phrases. The length of the Epilogue is twelve measures. Its musical phrase applies a conventional structure of four-measures units divided into two semi-phrases, each in motifs. Melodic lines mainly use monotone pitch tones with no closure via final cadence (see Figure 1). Following the first four-measure phrase is an auxiliary interlude broken chord motive in two measures bridging to its second appearance. A two-measure accompaniment figure pattern by the lower instruments section then closes this prologue section and, simultaneously, functions as an introduction to the next coming song's form.

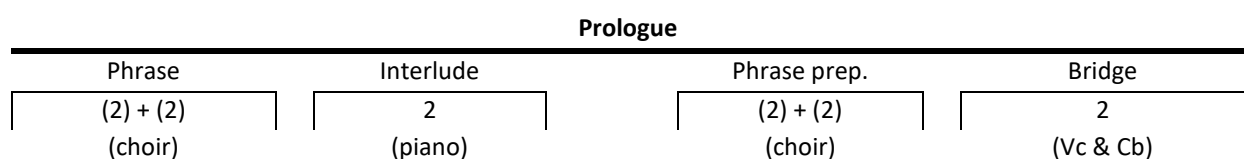


Figure 1: Sketch of prologue section.

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The interlude between the repetitions of the two four-measure phrases appears as a simple figurative rhythmical pattern of a triad of three notes between a major sixth and a major third interval, namely B, G-sharp, and B in the upper octave, along with the two measures.

Figure 2. Thematic statement phrase of the Prologue.

The Prologue ends with the appearance of a two-measure repeated figurative motif pattern (see Figure 2). The presentation of this motif in the last two measures of the Prologue simultaneously functions as an introduction to the following song form, with period A as the opening for Part One. Henceforth, this figurative motif pattern will reappear in subsequent periods, especially in antecedent phrases.

2. Part One: The main parts of this work comprise four periods within three parts, two periods in Part One, one period in Part Two, and one period in Part Three. Period A and its repetition started the song form by forming Part One, which served as an exposition. Period A1 repeats period A, which only has minimal changes or differences in the last measure of the two periods. The difference between Period A and A1 is only in using instruments in the last measure (see Figure 3). Violoncello and contrabass groups replace the violin and alto groups in the second period.

Part I

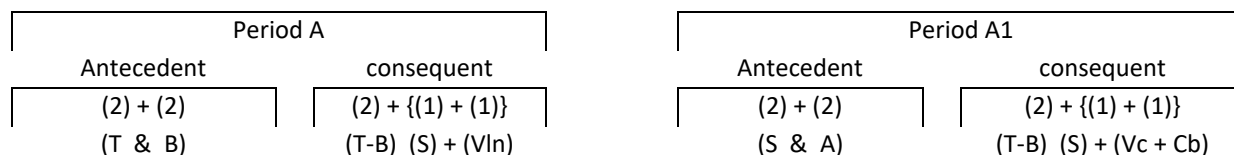


Figure 3. Sketch of Part One construction.

Period A is the main melody of The Omen theme song. While antecedent has a perfect phrase construction that each has two semi-phrases, consequent phrases have only one complete semi-phrase (see Figure 4).

Figure 4. Melodic extract of Period A and A1.

The second semi-phrase of the consequent phrase consists of female voices performing gliding descending portamento notes in the first measure. The following measure is a single pitch of semibreve by the violin group that applies a crescendo dynamic. At the same time, it functions as a bridge to the period repetition. In the second period, the last two measures also appear as gliding descending notes in a portamento way.

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At the same time, the firm figurative pattern derived from the last motif of the prologue accompanies the gliding notes. In the accompaniment pattern, the trumpet and trombone of a brass section strengthen the weak beats. Compared to the first appearance, the appearance of the brass section creates a more crowded effect, especially in the last measure, and leads to the next part of the song form.

3. Part Two: Part Two consists of a normative period. It consists of two four-note phrases, the antecedent and the consequent. Therefore, this part has eight measures only.

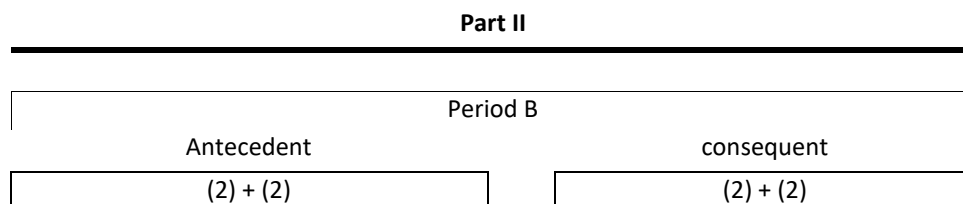


Figure 5. Sketch of Part Two skeleton

Figure 6. A simple polyphonic texture in Part Two

Except for the first measure of the second semi-phrase, the period consists of crochet notes. The choir sings this period passage. The composition treats the soprano-alto group as static while the tenor-bass group fluctuates up and down in each measure. When this period ends, it straight forward enters the next period, Part Three, without pause (the *attaca*) or transition.ion immediately follows the level-3 heading in the same paragraph. For example, this paragraph begins with a level-3 heading.

4. Part Three: The return of Period A as A2 in the third part shows the general characteristic period. In this period a unit of eight measures comprises two four-measure unit phrases. Each phrase is formed from two clear semi-phrases.

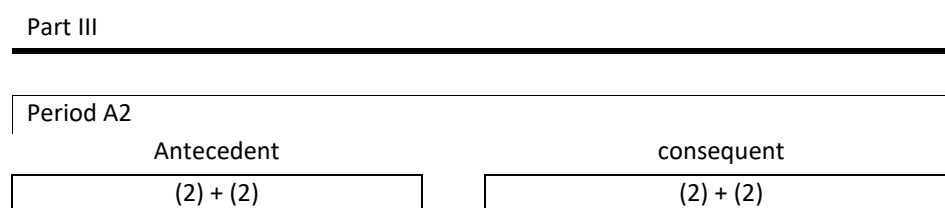


Figure 7. Sketch of Part Three skeleton.

At first glance, this period seems like there is no difference between Period A or A2. The only difference between the two periods is the cutting of the duration of the last note of each antecedent motif to create a firm impression.

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Figure 8. The return of the first period as A2 in Part Three.

The final notes of the motif on each measure use a quaver and its following rest signs combination of a semiquaver and a minim. The consequent phrase appears the other way around, i.e. starting with a crochet rest sign then three crochet notes at the same pitch, but increasing steadily from time to time, especially the last three measures. The different consequent characteristics of the antecedent suggest that the two phrases form a period of contrast.

5. Epilogue: The concluding section is concise because the length is only a four-measure unit phrase. If the opening of this work is more appropriate to use the term prologue rather than the introduction, then this closing section should be called an epilogue. However, since this section is concise, there seems little reason to call it an epilogue.

Epilogue

Semi phrase 1		Semi phrase 2
{ (0) + (1) }	+	(2)

The choir starts with an empty bar
Organ-point -----> decres./lontano

Figure 9: The Epilogue construction

The violoncello and contrabass group started with the organ point, a drone sound, with a fixed-pitch semibreve of A note. The drone lasted for four measures toward the end of the section. Above the drone, three consecutive cadence motifs range from second to fourth measures. Each motif composed of crochet notes on the first and second beats occupies one full measure only by the choir, set in an opposite direction between a descending female voice and an ascending male voice. Starting from measure 46, an interrupted cadence, if considered key signature was C major, appeared, progressing from dominant seventh to sub-median chords. The repetition of this cadence happened precisely in measure 47.

Figure 10: The brief Epilogue

The cadence then reappeared for the third time in the last three measures of the Epilogue. It appears with a modified rhythm by doubling the first chord to complete this final section. The measure started with a semiquaver rest, and the first chords appeared twice in semiquavers. The final cadence chord uses semiquavers which are shorter compared to the last chords of two former subsequent cadences. The use of semiquavers creates a firm termination of the entire work. In the last four measures, the organ point happened in descending dynamic order—the final chord is composed of a perfect fifth interval. The fifth interval construction was the final meeting point of two contrary motions between the higher and lower voices' melodic lines of the last motive.

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B. Ave Satani Musical Motifs

Motif analysis indicates that this work refers to a single central motif introduced in the opening phrase of the prologue. There is a total of 15 developed motifs besides the central motif. This composition applies three auxiliary motifs and four supporting motifs. Their functions are to link sections within main motifs. The designed motifs comprise four derivative motifs, each with its variables. Three auxiliary motifs fill out several gaps in this composition. Except for one, each of the others developed into one derivation motif only.

Figure 11. Motif analysis of Ave Satani (Goldsmith) by authors

Codification of the main motif uses the first letter in italic and lowercase form, namely motif a. The other auxiliary motifs use the subsequent three letters, b, c, and d. The other derivations refer to both codes, such as c1 and d1. The other codes for variable motifs, which refer to specific derivation motifs, are made by adding numbers in sequences, such as a1.1 and a3.2.1.

1. Main Motifs: The Ave Satani song uses a simple central motif, coded as "motif a," that fulfils a two-measures thematic phrase announced in the prologue. This main motive transposed to the fifth above its first appearance within Part One, being the a1. This derivative motif then reappeared in Part Three but with an articulation of the last note duration of each measure, made up by adding a quaver and a minim rests sign (a1.1). In the consequent phrases, both in Period A and Period B, the central motif is rhythmically shortened into one measure only so that there is a reason to name the diminutive phenomenon as the a2 motif. Within this rhythmical diminution, the melodic line also modified from monotonic to melodious. However, in Part Three melodic direction of this motif change oppositely to be its variable as a2.1 so that the variable applies an inaccurate contrary motion.

Table 1: The derivation of the main motif

	Motifs	Measures	Description
1.	a	1-2, 3-4, 7-8, 9-10	Central motif statement.
2.	a1	13-14, 15-16, 21-22, 23-24	The first modification of the central motif; Transposition to a higher pitch position.
3.	a1.1	37-38, 39-40	Rhythmical articulation of the last note duration.
4.	a2	16, 25,	Diminution and melodic modification
5.	a2.1	41	The contrary motion of a2
6.	a3	18-19, 26-27	Retrograde; melodic modification; first appearance of Ave and Satani words in reverse order.
7.	a3.1	35	Modification of a3 material (melismatic). The correction of the Satani Ave phrase to be the Ave Satani

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8.	a3.2	42	Pitch correction and transposition of a3
9.	a3.2.1	43	Sequence of a3.2
10.	a3.2.2	44	Sequence of a3.2.1
11.	a3.3	46, 47	cadences
12.	a3.4	48	Rhythmic diminution
13.	a4	29, 30, 33	Diminution & reduction
14.	a4.1	31, 32	Sequence from a4
15.	a4.2	34	The imperfect contrary motion of a4.

From the beginning of Part Two again, the diminution and melodic modification happened in motif a4 but tended to be monotonous that only the last note of each bar moves one step down. After being repeated in the next measure, the motif moves half a step up in sequence and becomes its first variable, the motif a4.1. The second measure of the consequent in Part Two contains motif a4.2 as the second derivation of a4. This derivation is an imperfect contrary motion from motif a4. The third derivation of motif a4 as the a4.2 appears at Part Two's end. The function of this motif is the transition to Part Three.

2. Auxiliary Morifs: The first auxiliary member is motif b which appears once only and has no derivation in the entire song. This motif appears in the prologue as an interlude between two motif statements repetition. Meanwhile, the second auxiliary is motif c, a repeated figurative pattern performed by lower instruments. The motif expects the coming of song form. This motif then repeatedly appears in the subsequent measures as the accompaniment section.

Table 2. Auxiliary motifs

No.	Motifs	Measures	Description
1.	b	5-6	The interlude between the central motif repetition
2.	c	11, 12,	Running accompaniment pattern that bridges between the Prologue and the song form
3.	c1	28	Transposition
4	d	20	Bridges to the repetition of period A.
5.	d1	45	Bridges to cadences/ dynamic contrary

In the consequent phrase of Period A1 within Part One, motif c1 replaces motif d. The replacement happens in the same position within the consequent phrase of Period A. Motif d is a single figure of a simultaneous of two A notes in octave harmonic intervals with crescendo dynamic (gradually getting louder) as a bridge to the repetition of Part One. However, the appearance was by the opposite dynamic, the decrescendo (or gradually becoming softer). However, this motif reappears as motif d1 at the beginning of the epilogue." above.

C. Ave Satani Role within The Omen

To know the role of Ave Satani in The Omen, we need to look at the song's placement in the film and understand the content of its lyrics. Based on the film soundtrack recording content, at least 61 musical works in The Omen as announced on the "soundtrackcollector" website. Soundtrack's release of The Omen Trilogy CD recording was in two versions (<https://www.soundtrackcollector.com>). The first is with the colosseum VSD collection code (CVS) 6687 (Germany, 2005), and the second is Geneon GNCE-5009 (Japan, 2005). Even though there are dozens of song illustrations for this film, this study focuses on the theme song Ave Satani as the first soundtrack. In The Omen, the piece Ave Satani appeared only twice, namely at the opening credits and at the end of the last scene until the entire ending credits. The opening credit duration of the prologue is shorter than the ending credits. In addition, it does not include the epilogue ultimately

The total time of the film, including opening and ending credits, is 111 minutes. However, the running time of the film scenes is 107 minutes, starting from 00:01:25 up to 01:49:27. The film is about the problems faced by a U.S. family couple, Robert Thorn, played by Gregory Peck and Katherine Thorn by Lee Remick. The family adopted another baby whose mother died in childbirth and was later named Damien, played by Harvey Spencer Stephens. The adopted baby was born in Rome, simultaneously with the Thorn family's baby, born on June 6, at 6 a.m. Five years later, the U.S. government appointed Robert Thorn as ambassador to the United Kingdom. Since then, the family has encountered strange things in Damien. Among them is the murder of certain people who know and are indirectly related to Damien. Shortly after that, a Catholic Priest, Father Brennan,

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tells Robert that Damien is not a human but a son of demons who will one day kill Katherine. He suggested that Damien has to die in a certain way. After conducting an investigation, encountering strange things that indirectly relate to Damien, and believing the truth, he tried to save Katherine and attempted to kill Damien. In the end, Robert failed to save Katherine, who died severely. Unfortunately, when Robert nearly kills Damien at the altar of a nearby Chapel, the police shoot him.

1. Ave Satani in the Opening Credits: At the opening credits, the duration of Ave Satani is two minutes and ten seconds, ranging from 00:00.15 to 00:01.24, while at the ending credits section is three minutes from 01:48:30 to 01:51:00. In this section, the song accompanies the company logo's title page, namely the 20th Century Fox, production information, main stars such as Gregory Peck and Lee Remick, and film title where Ave Satani song appear for the first time. After the film title, the screen mentions several essential names, including Harvey Stephens as Damien and Jerry Goldsmith as the music composer. Finally, the ending credits are closed by the film director mentioned, Richard Donner. The one measure of the epilogue opening figure played by the lower Instrument ends the opening credits.

Compared to the second appearance of the theme song in the last scene and at the ending credits section, the opening credits section eliminates the first phrase of the prologue and the last three measures of the epilogue. Considering the second version is longer, we decided on the first for musical analysis.

Table 3. Comparison of Ave Satani presentation in the opening and ending credits

No.	Part	Section	Opening credit	Closing credit
1.	Prologue	Thematic statement	-	√
2.	(Same as above)	interlude	√	√
3.	(Same as above)	Repeated statement.	√	√
4.	(Same as above)	Transition	√	√
5.	Period A	Antecedent	√	√
6.	(Same as above)	Consequent	√	√
7.	Period A1	Antecedent	√	√
8.	(Same as above)	Consequent	√	√
9.	Period B	Antecedent	√	√
10.	(Same as above)	Consequent	√	√
11.	Period A2	Antecedent	√	√
12.	(Same as above)	Consequent	√	√
13.	Epilogue	Epilogue opening	√	√
14.	(Same as above)	Repeated cadence	-	√

The choir performed the Ave Satani theme song lyrics, a simple verse inspired by Gregorian chant liturgic text but rearranged in the satanic version. Goldsmith composed this work as a kind of Black Mass, which he did by flipping words from the original Latin text. For example, from "Hail Mary" (Ave Maria) to "Hail of Satan" (Ave Satani). Another example is the "Body of Christ" (Corpus Christi) to the "Body of Satan" (Corpus Satani). Here is a table of the complete phrases:

Table 4. Ave Satani lyric

Line	Latin	English
1	Sanguis bibimus	We drink the blood
2	Corpus edimus	We eat the flesh
3	Tolle corpus Satani	Raise the body of Satan
4	Ave!	Hail!
5	Ave, ave verus Christus!	Hail, hail the Anti-Christ!
6	Ave Satani!	Hail Satan!

Table 4 indicates that the arrangement of repeating verses throughout the song is, in fact, concise, such as "Sanguis bibimus corpus edimus. Tolle corpus satani ave." The idea of writing lyrics for this composition came out of a consultation between the composer and the London orchestral choirmaster, who was an expert in Latin (Lysy, 2018).

2. Ave Satani in the Ending Credits: The second appearance of Ave Satani started at the end of the last scene and the entire ending credits (see Table 5 and Table 6). The final scene portrays the US military funeral procession for the deaths of Robert

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Thorn and Katherin Thorn. The US president with the first lady still stands on their back to the camera when all mourners leave the cemetery. After an officer had alerted him concerning his car, it was surprising that Damien was standing in between and directly facing the camera. That is when the Ave Satani song began to appear for the second time as the film's closing illustration music.

Table 5. Ave Satani in the Last Scene

No.	Period/ section	Lyric/ sound	Pictures	Time position
1.	-	Military funeral soundscape.	Funeral procession of Robert Thorn and Katherin Thorn	1:46:45
2.	Thematic statement	<i>Sanguis bibimus</i>	Damien stares at the camera.	1:48:30
3.	Figure rep.	<i>Corpus edimus</i>	Damien started smiling.	1:48:36
4.	Interlude	A figurative pattern of broken chord by piano.	Quotation from the Book of Revelation Chapter 13 Verse 18	1:48:42
5.	Repeated thematic statement	<i>Sanguis bibimus</i>	Same as above	1:48:48
6.	Figure repetition	<i>Corpus edimus</i>	Same as above	1:48:54

In the last scene (as seen in Table 3), the thematic statement and its repetition in the prologue of Ave Satani's song illustrate two pictures: Damien's gaze and smile and a quotation from the Book of Revelation Chapter 13 Verse 18. The second picture is longer because it starts from the interlude between the phrases.

Ending credits feature running texts, where a two-measure bridge motif initiates its musical illustration to the presentation of a three-part song form. The bridge is in the form of a continuous figurative accompaniment pattern played by lower instruments.

Table 6. Ave Satani in the Ending Credit

No.	Period/ section	Lyric/ sound	Pictures	Time position
1.	Bridge (Final scenes)	Continues figurative accompaniment pattern on lower instruments.	Running texts/ actors cast.	1:49:00
2.	Period A/ Part One	<i>Sanguis bibimus</i>	Same as above.	1:49:06
3.	(saa.)	<i>Corpus edimus</i>	(saa.)	1:49:12
4.	(saa.)	<i>Tolle corpus</i>	(saa.)	1:49:18
5.	(saa.)	<i>Satani Ave</i>	Extra players' information and the religious adviser, etc.	1:49:24
6.	Period A1	<i>Sanguis bibimus</i>	Ass. Art Dir & Casting, etc.	1:49:30
7.	(saa.)	<i>Corpus edimus</i>	Production Manager, etc.	1:49:36
8.	(saa.)	<i>Tolle corpus</i>	Special effects organiser, etc.	1:49:42
9.	(saa.)	<i>Satani Ave!</i>	Location manager etc.	1:49:46
10.	Periode B/ Part Two	<i>Ave, ave versus Christus!</i>	Dialogue editor, etc.	1:49:55
11.	(saa.)	<i>Ave, ave versus Christus!</i>	Dogs Owner & trainer, etc.	1:50:00
12.	(saa.)	<i>Ave, ave versus Christus!</i>	Filmed & color.	1:50:06
13.	(saa.)	<i>Ave Satani!</i>	Frank Film Laboratory.	1:50:12
14.	Period A2/ Part Three	<i>Sanguis bibimus</i>	Motion Picture Association of America approval.	1:50:18
15.	(saa.)	<i>Corpus edimus</i>	Music recording studio.	1:50:24
16.	(saa.)	<i>Tolle corpus Satani</i>	Copyright by Twentieth Century-Fox Film Corporation.	1:50:30
17.	(saa.)	<i>Satani! Satani!</i>	Copyright warning	1:50:35
18.	The opening of the closing section	(single pitch tones)	Made by Twentieth Century-Fox Production Ltd. & Released by TC-Fox Film Corporation.	1:50:42
19.	Cadences	<i>Ave!, Ave!</i>	Same as above.	1:50:47
20.	Coda	<i>Satani!</i>	<i>The Omen</i> (666) logo.	1:50:57

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The epilogue begins with a *sforzando* (suddenly loud) tone in full measure, followed by a sign of *decrescendo* or gradually becoming softer. The anti-climax session after the appearance of three consecutive statements of the word *Satani* before this measure used *crescendo* (gradually becoming louder) dynamics. From the beginning of the epilogue to the end of two repeated cadences, the film appears at the product creator company notice, the Twentieth Century-Fox Production Ltd., and the film released notification by the TC-Fox Film Corporation. Finally, the coda with the word *Satani* accompanies The Omen logo, including the triple six symbols within the letter O.

D. Discussion

All title and author To clarify musicological results, the authors interviewed three subjects, each of whom is an expert in their respective fields. The first subject is Pandan Purwacandra, a scoring film lecturer from the Indonesian Institute of the Arts (Institut Seni Indonesia, or ISI) Yogyakarta. The second subject is Joshua Eka Pramudya, a film-scoring practitioner who has composed many compositions. Two of them are an animation film (2018), directed by Lestyono Kristanto (Kristanto, 2018), and *Trunyan* (2018) by Gandhi Bramayusa (Bramayusa, 2018). The *Kisah Sore Ini* ('this afternoon story') received third place in the fifth Police Movie Festival 2018, an annual event held by the national headquarter of the Republic of Indonesian Police. The *Trunyan* was nominated for an 'official selection' at the Toraja Film Festival (2018) and the Bali Film Festival (2018). The third subject was I Gusti Ngurah Wiryawan Budhiana, a composer, conductor and lecturer at ISI Yogyakarta. Budhi Ngurah, a familiar name of the composer, has composed many instrumental musical works. One of his essential works was the *Borobudur* (2017), which premiered in the Dago Tea House, Bandung, on August 14th, 2017 (Ngurah, 2017).

In interview sessions held at the Faculty of Performing Arts campus at ISI Yogyakarta, all three subjects agreed that the *Ave Satani* song in the opening credits and final scenes changed tension. The third subject explained that repetitions of melodic motifs in *Ave Satani* reinforced anxiety (interview with 3rd subject on May 17th, 2018). The first subject added that horror film music in the era before the 21st century used dissonant intervals as a medium to strengthen or weaken tension (interviewed on May 24th, 2018). The second subject agreed with the third subject that *Ave Satani* created a dark feeling in the film. He said that dark nuance arose because of the dissonant interval.

At the same time, the third subject reasoned that low section instruments and dissonant intervals are the reasons for the dark nuances (interview with the 2nd subject on April 30th, 2018). In the opening credits, the first and second subjects agreed that the role of the *Ave Satani* song is to introduce the film to the audience. The first subject expressed that this theme song introduces the film's horror to the audience. At the same time, the first subject assured that the correlation between the opening credits and the music emerged from The Omen logo. The logo depicts the silhouette of a boy main character in the film with the shadow of the cross. This silhouette creates a feeling of loneliness. The three interviewees agreed that *Ave Satani* has helped conclude the film's story plot for the final scenes and ending credits. A film producer wants to convey particular messages through this song. All three subjects agreed that *Ave Satani* created an atmosphere related to the church in this film, both in the opening credits and the final scenes. The third subject added that this composition is minimalist music due to the repetition of motives and ideas.

Ave Satani could be atonal music due to the many dissonant intervals and absence of a "tonal centre" seen from the movement of nuances that tend to be random. The dissonant interval appears in all parts of the *Ave Satani* song, from the prologue to the epilogue. Many post-1950s gothic and supernatural horror films used dissonant, atonal and unusual configurations for musical instruments to signify all forms of paranormal activity and anomalous activity (Tomkins, 2014). Brownrigg (2003), in his dissertation, mentioned that atonality and silence are characteristics that appear in horror films. Low-part instruments such as cello, contrabass and bassoon also have an essential role in this composition. This phenomenon confirms that low-part instruments have the power to create a dark atmosphere in *Ave Satani*. Aspects of church music appear in the selection of instrumentation for this composition. The choir's application as the main melody in this composition creates a solid ecclesiastical atmosphere. Composers of this kind of composition want to build nuances that mimic the liturgical music of the church. However, the composer combines monophonic, homophonic and polyphonic textures. Monophonic textures appear at the beginning of recognition before eventually becoming homophonic. Polyphonic textures appear after a bridge on the piano when Part A provides a counter melody session. The composer also incorporated elements of Gregorian music, mass and motet style in this composition.

Gregorian music uses monophonic principles sung in Latin. Mass and motet styles use renescent polyphony models combined with other instrumental groups (Miller, 1973). Due to the choral style and Latin that appear in the composition, we could say that *Ave Satani* has a church musical element. The use of organs in the complete version composition heard in the last scene

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increases the tension and atmosphere of the church. It was commonly used for mass in churches before the 18th century. It is strongly associated with church music as a solo and accompaniment instrument (Martasudjita and Prier, 2012).

In passing Ave Satani looks like a stand-alone composition in the film. Its seemingly contrasting characteristics with other songs in the film's tracks will outwit observers that its musical compositions are non-diegetic. If that were the case, Ave Satani would appear in different layers and not belong to the story. It means that Ave Satani did not appear as a dialogue or song sung by actors and actresses. At first glance, Ave Satani looks like a stand-alone composition. Its characteristic contrasting with other songs in the film's tracks could deceive observers that its musical composition is non-diegetic. If so, then Ave Satani would appear in different layers and did not belong to the story. But is the truth that way? Of course not. It means that Ave Satani essentially belongs to the story. It did appear as dialogue but not in vulgar inappropriate ways within the film. Ave Satani also is sung in various treatments within the movie by the choir and orchestra (Pratista, 2008).

If we look deeply at the Ave Satani as the movie theme song, its motifs have been the basis of other scenes' soundtrack musical themes. The designed motifs, derived from motif a, always illustrate horror acts. Both motifs a and b support two contrasting scenes, in happiness and sadness visuals. However, although motif b, made up of a triad of broken chords, appears once only in the prologue, it indeed developed to be some soft and sweet melodies. For example, we could find the love theme music (00:06:48 – 00:07:32) that its theme is the derivation and development of the interlude motive of the prologue.

Here Robert lets Katherine know that the government had appointed him the new US ambassador for Great Britain. Katherine then spontaneously holds Robert with complete happiness. The music then accompanies the picture up to their moving to the new home in London. The music played again after a pause for a while when Katherine opened the door of a room. Robert then said hello through a glass window to Damien, who was off the room with the Nanny on the balcony. The music played again to illustrate the couple's happy expression when they found the presence of Damien after losing for a while, accompanied by the music. The music keeps playing when Robert, Katherine, and Damien, visit a garden (00:07:52 to 00:09:37). Then, without any pause, the tune accompanies a series of happy photo captions until Damien's fifth birthday scene (00:10:27 to 00:10:51).

Interestingly, the developed themes from motif b are also appropriate to support sad nuances. The melodic tunes accompany the sadness of Robert due to indirect problems that he believes are caused by Damien. The most important one is the incident experienced by Katherine that finally followed by her death. For example, the referred prologue's interlude motif found (from 00: 45:51 to 00:47:16) where Katherine discussed her birth to Robert. Katherine doesn't want to add any more children and intends to have an abortion. This motif accompanies a scene that features Mr Thorn lying in shock over the tragic death of his wife. In this scene, a piano plays this interlude motif. At that moment came the photographer, played by Patrick McAlinney. The two discussed Mr Thorn's problems and the threat of anti-Christ forecasts.

On his way back to his London residence, the developed motif from this interlude prologue reappears. The tune containing the piano motif, is again, illustrated when Robert was in the flight and the car until he reached his home (01:26:32 to 01:27:15). Robert trapped the dog in the house and locked it in the basement. He then headed to his wife's room, saw the bed, and the sad melody is played again. After he picked up shaving scissors from a closet drawer, he headed to Damien, who was sleeping. The music stops as Robert shaves Damien's hair and finds the symbol "666" on his head.

Meanwhile, the Ave Satani lyrics' central motif (a), which initially sounds sacred in medium tempo, is now radically being processed into many new motifs. The developed motifs reinforce the tense atmosphere concerning the psychological horror of the film scene. Music containing Ave Satani lyrics illustrates the little Devil Go to the Church scene (00:26:00 to 00:27:17).

Damien begins to get restless when he sees the church building on the way to the church by car, along with Robert and Katherine. Once at the church door, Damien thrashed around in Katherine's lap, and finally, Robert and his wife decided to take Damien away from the church. Figurative motives developed from motif c in this scene then always appear ahead of strange acts, for example, during the Nanny's death scene. The music illustrated horror nuance when she saw a black dog stare at her (00:12:20 to 00:12:32). Other locations whose musical illustrations present the lyrics of Ave Satani is in the priest's death scene (00:43:14 to 00:44:40). In this scene, Father Brennan tried to avoid the sudden weather change to be very bad and ran towards the chapel. But the chapel door couldn't open. Lightning then suddenly struck the chapel's lightning rod so that it detached from the roof and finally hit Father Brennan's chest and ironically stuck it through to the ground. The Ave Satani musical motif also accompanies the little devil scene (49:40 to 50:40) on the balcony inside the Thorn family residence. Damien rides a children's three-wheel bike in a room parallel to the internal balcony. Mrs Baylock, played by Billie Whitelaw, who accompanied Damien in the room, purposely opened the door, so Damien exited the room on his bike and hit Mrs Katherine. At that time, Katherine stood on a coffee table to fix a hanging flower pot on the palate. Mrs Katherine then fell to the ground floor over the balcony fence.

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The Ave Satani derived musical motifs in a sub-theme tune curate more suspenseful horror scenes, both on the ruined cemetery scene, and Mrs Baylock killing Katherine scene. Firstly, the Ave Satani motifs appear when Robert Thorn, along with the photographer, opens the grave of Mr Thorn's baby, who died at birth (1:18:47 to 1:19:46). They then opened the other tomb next to the first that belonged to Damien's birth mother. They find a skeleton that was not a human but a wolf inside the tomb. The music then becomes intense during the arrival of a group of wolves who attack them. Secondly, illustration music containing Ave Satani lyrics accompanying the Mrs Baylock kills Katherine scene (1:24:08 - 1:24:49). Baylock pushes Katherine from a top floor window's room of the hospital building. Katherine's body falls onto the ambulance's roof and lands on the patient's stretcher. The picture shows Katherine's body as the ambulance's back door opens. The most disgusting scene accompanied by the derived motif from Ave Satani is when the back part of a truck uncontrollably hit the photographer (01:33:57 to 01:34:23). The collision severed the photographer's head which subsequently rolls and stops just under his own feet.

Ave Satani's first appearance was in the opening credits section, and the second performance was in the last two scenes until the end of the final credits. In its first appearance, Ave Satani had a significant role. The first role was to introduce the film to the audience. Pandan Purwacandra said that the function of Ave Satani is to present how horror the film is to the audience. Ave Satani also creates an atmosphere related to the ecclesiastical atmosphere produced by choral vocals. However, this atmosphere turns negative when juxtaposed with atonality and dissonance, thus giving rise to an atmosphere of darkness and dissonance that is in stark contrast to church music which usually uses the tone of voice. It provides a symbol of the antagonism between evil and good (Tomkins, 2014). Ave Satani's next role is to increase tensions. This constant crescendo in the composition creates tension that slowly rises and culminates at the end of the opening credits, where the song ends just as the opening credit transitions to the first scene. The use of minimalist musical concepts also gives a lonely feeling when combined with the symbol of The Omen which appears as the silhouette of a child alone with an upside-down cross shadow.

The feel of silence comes to life with minimal music that matches the logo that also evokes solitude. In contrast, in the final two scenes, the complete Ave Satani begins when the main character (Damien) turns toward the camera, seemingly making eye contact with the audience as he begins to smile. This scene continues with a new location referring to a passage from the Bible's Book of Revelation in Revelation 13:18 that reads, "This is Wisdom. Let him be the one who has: the number of men; and the number is 666" (Hub, 2021). The complete Ave Satani song continues until the conclusion of the ending credits. The central role of Ave Satani in his second performance was to conclude the main storyline in the film. Ave Satani also helps to infer the true identity of the main character as the "Antichrist". Another role is to increase tension in these scenes, thus impacting the horror of the audience. Combining unique aspects such as dissonance, ecclesiastical elements, and a constant crescendo amplifies the climax in this scene. At the same time, there is no critical function in the final credits other than maintaining tension—it accompanies the departure of the audience from the cinema house.

Ave Satani's songs combine conventional song forms, dissonant intervals, and church musical styles. Traditional elements are evident in three-part song forms and motif development. The aspects of dissonance present from the beginning to end of the work are characteristic of atonal musical compositions. Dissonance expresses a supra-natural atmosphere, while the choir's presentation expresses elements of church music throughout this work. The quality aspects that underpin Ave Satani, which successfully supported the nomination of Best Original Song, The Omen at the Academy Awards, are evidenced in the processing of motif development, and dissonant harmony, and his orchestration successfully meets the demands of horror films. There is evidence that aspects of motif development have shaped the uniqueness of the melody well. We can see that only two main motives build the entire composition, while the other found in the piece are derivative motifs.

Ave Satani is part of atonal music from the harmonic aspect because of its dissonance intervals. Dissonance intervals appear from the beginning of recognition to the end of this composition. Dissonance and atonality are some of the characteristics of horror movie music. Even many post-1950s Gothic and supernatural horror films use dissonance, atonality, and unusual instrument configurations to signify all sorts of anomalous paranormal activity. Silence is also characteristic in horror movie music. In this composition, low-register instruments such as cello, contrabass, and bassoon also play an essential role. According to an Indonesian composer who was willing to be interviewed as one of the respondents to the study, the function of low-pitched instrumental parts is to create dark shades in musical compositions.

Distinctive aspects of church music come from the choice of instruments. The polyphonic style of Renaissance's motets and masses joined the instrumental group. In addition, the utilization of organs in this composition increases the tension and atmosphere of the church. Historically, the organ was one of the instruments commonly used for mass accompaniment before the 18th century. The instrument was primarily associated with church music, both as a solo instrument and a choral accompaniment. In Goldsmith's Ave Satani, Organ accompanies the choir to build an intense church atmosphere. For the main

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melodic chorus, the composer imitates the passage commonly used in liturgical music that combines Gregorian song styles, masses and motets.

Behind the uniqueness of musicological characteristics attached to Ave Satani, it turns out that all thematic materials, both on the main and auxiliary motifs become the essential ingredients of the creation of the entire soundtrack sub-theme in the film *The Omen*. The simplicity of motifs, song form, harmony, and orchestration on Ave Satani is the key to the development of tonal and atonal illustration music in the scenes of this film. Ave Satani appearing in the opening credits section is not an overture of abstract stories in the film. It anticipates the presentation of all the soundtrack music in the scenes of this film and establishes a fundamental philosophical concept of the film. Meanwhile, the second appearance is a musical accompaniment of the running text and the film's conclusion. For the audience, the second appearance of Ave Satani is perhaps more meaningful than its first appearance. After watching the entire film, while the music illustrations are developed from the Ave Satani theme song's motives, the audience would have references in appreciating the song in its second appearance.

V. CONCLUSIONS

In conclusion, the theme song Ave Satani has unique characteristics and a complete musical role in *The Omen* (1976) film. The work has combined conventional melodic song forms, the harmonic style of post-1950s horror films, and the liturgical church musical style. Ave Satani is also vital in this film because it underlies the concept and plot of the film story and underlies all the illustrated music that becomes the soundtrack scene in this film. Thus, the role of Ave Satani in *The Omen* helps to introduce and also to conclude the movie. In accompanying the scenes of *The Omen* film, Ave Satani's motifs are not only to create atmosphere, increase tension, and amplify the climax of settings for other roles, but also to create an atmosphere of deep love, happiness, and sadness. Due to its rich musical aspects and complete roles in *The Omen*, it is no wonder that the unique Goldsmith's Ave Satani is the only horror film theme song to receive an Academy Award nomination for Best Original Song to date.

This research bridges the rare studies on music history and analysis with the new models of music studies from a multi-disciplinary perspective, especially with psychology. The study offers the concept that the analytical study of music could also be interesting if applied to new objects from other fields, such as culture and film. Thus, the aesthetic values of music can be one of the considerations in the study of musicology today. Musically, the study aims to provide alternative considerations in developing film music, especially theme songs in horror films. We hope this research can be one of the ideal alternatives for improving and creating the best quality horror movie theme songs.

ACKNOWLEDGMENT

This work was supported by the Department of Music, the Faculty of Performing Arts as well as the Research Centre of the Institut Seni Indonesia Yogyakarta. In addition, our highest appreciation goes to Edward C. Van Ness from Sumatra Conservatoire for his assistance in proofreading this article before submission.

REFERENCES

- 1) Arnold, B. (2019). American Composers Respond: The Holocaust. In S. M. Kraaz (Ed.), *Music and War in the United States* (pp. 276–290). Routledge. <https://www.worldcat.org/title/music-and-war-in-the-united-states/oclc/1078636957>
- 2) Asadpour, M., & Shirouyehzad, H. (2019). Performance Evaluation and Ranking of Academy Award Winners for Best Original Score Applying Data Envelopment Analysis: 1990–2016. *Operations Research Letters*, 47(5), 371–376. <https://doi.org/10.1016/j.orl.2019.07.003>
- 3) Bailey, J. (2021). The First Oscar Ceremony Lasted 15 Minutes. What Happened? *The New York Times*, 14. <https://www.nytimes.com/2021/01/27/movies/academy-awards-history.html>
- 4) Bishop, R. (2020). "Not an Ounce of Hollywood Bullshit": A Narrative Analysis of News Media Coverage of Spotlight's Oscar Win. *Journal of Communication Inquiry*, 44(3), 157–177. <https://doi.org/10.1177/0196859919829482>
- 5) Björk, C., Ruthmann, S. A., Granfors, M., Högväg, J., & Andersson, S. (2021). The Potential of a Mixed-Methods Approach for Research on Learning to Theorise Music. *Music Education Research*, 23(3), 374–390. <https://doi.org/10.1080/14613808.2020.1853085>
- 6) Bramayusa, G. (2018). *Trunyan (Beyond the Lake)*. <https://youtu.be/7tpYps7Y-VQ>
- 7) Brownrigg, M. (2003). *Film Music and Film Genre* (Issue April) [Doctor of Philosophy thesis, University of Stirling]. <https://dspace.stir.ac.uk/bitstream/1893/439/1/BrownriggM2003-14072008.pdf>

Ave Satani Motifs Relation to Narrative Thematic Development of the Omen: An Analysis of Oscar-Winning Horror Film Music

- 8) Carden, A. (2018). Oscar Flashback: Best Original Songs of the Mid-1970s, Including 'I'm Easy,' 'Evergreen'. GoldDerby: Predict Hollywood Races. <https://www.goldderby.com/article/2018/oscars-best-song-history-mid-1970s-academy-awards-news/>
- 9) Casagrande, F. T. T. (2019). Investigating Nineteenth-Century Transcriptions through History of Opera and Music Publishing: Mauro Giuliani's Sources for Two Themes in Le Rossiniane No. 2, Op. 120, and No. 3, Op. 121. *Malaysian Journal of Music*, 18, 19–51. <https://doi.org/10.37134/mjm.vol8.2.2019>
- 10) Chakravorty, D. (2018). Poll: Oscars 2018 — Films With Multiple Nominations. IMDb.Com, Inc. https://www.imdb.com/poll/xX2_y1exG6o/results?ref_=po_sr
- 11) Chełkowska-Zacharewicz, M., & Paliga, M. (2020). Music Emotions and Associations in Film Music Listening: The Example of Leitmotifs from The Lord of The Rings Movies. *Roczniki Psychologiczne*, 22(2), 151–175. <https://doi.org/10.18290/RPSYCH.2019.22.2-4>
- 12) Cizmic, M. (2017). Empathy and Tinnituli Music in Film. In L. Dolp (Ed.), *Arvo Part's White Light: Media, Culture, Politics* (pp. 20–46). Cambridge University Press. <https://doi.org/10.1017/9781316863459.002>
- 13) Conklin, D. (2010). Distinctive Patterns in the First Movement of Brahms' String Quartet in C minor. *Journal of Mathematics and Music: Mathematical and Computational Approaches to Music Theory, Analysis, Composition and Performance*, 4(2), 85–92. <https://doi.org/10.1080/17459737.2010.515421>
- 14) Duckles, V., Pasler, J., Stanley, G., & Christensen, T. (2019). *Musicology*. Oxford Music Online/ Grove Music Online. <https://www.oxfordmusiconline.com/grovemusic>
- 15) Earp, Lawrence & Fauser, Annegret (Presidents) (2022). What is Musicology? American Musicology Society. <https://www.amsmusicology.org/page/whatismusicology>
- 16) Hilewicz, O. (2021). Schoenberg's Cinematographic Blueprint: Aprogrammatic Analysis of Begleitungsmusik Zueiner Lichtspielszene (1929 1930). *A Journal of the Society for Music Theory*, 27(1). <https://doi.org/10.30535/MTO.27.1.4>
- 17) Hooper, G. (2017). A New Musicology. In *The Discourse of Musicology* (1st Edition) (pp. 5–40). ASHGATE e-book. <https://www.routledge.com/The-Discourse-of-Musicology/Hooper/p/book/9781138248205#:~:text=In The Discourse of Musicology, postmodern' turn in musical scholarship.>
- 18) Hub, B. (2021) Bible-Hub: Online Bible Study Suite. [accessed 23/07/2023], <https://biblehub.com/>
- 19) Imanjaya, E., Amelia, A., & Meilani. (2021). Three 'ecological monsters' in Bong Joon-Ho's films. *International Conference on Biospheric Harmony Advance Research 2020 - IOP Conference Series: Earth and Environmental Science*, 729(1). <https://doi.org/10.1088/1755-1315/729/1/012103>
- 20) Jacobs, E. (2018). 18 Oscar-winning Horror Movies That Shocked and Surprised. *Movieweb: Movie List*. <https://movieweb.com/oscar-winning-horror-movies/>
- 21) Johan, A. (2017). Scoring Tradition, Making Nation: Zubir Said's Traditionalised Film Music for Dang Anom. *Malaysian Music Journal*, 6(1), 50–72. <https://doi.org/10.37134/mjm.vol6.1.4.2017>
- 22) Keathley, E. L. (2010). Interpreting Erwartung: Collaborative Process and Early Reception. In J. Shaw & J. Auner (Eds.), *The Cambridge Companion to Schoenberg* (pp. 81–93). Cambridge University Press. <https://doi.org/10.1017/CCOL9780521870498.007>
- 23) Kim, J., Hwang, S., & Park, E. (2021). Can we predict the Oscar winner? A machine Learning Approach with Social Network Services. *Entertainment Computing*, 39(2021), 100441 (article number). <https://doi.org/10.1016/j.entcom.2021.100441>
- 24) Kristanto, L. (2018). Kisah Sore Ini. Police Movie Festival. <https://youtu.be/wZ1Z7tFcuBI>
- 25) Kvalsvik, F., & Øgaard, T. (2021). Dyadic Interviews versus In-Depth Individual Interviews in Exploring Food Choices of Norwegian Older Adults: A Comparison of Two Qualitative Methods. *Foods*, 10(6). <https://doi.org/10.3390/foods10061199>
- 26) Lysy, C. (2018). THE OMEN - Jerry Goldsmith. *Movie Music UK ; Scores of the Twentieth Century, Reviews*. <https://moviemusicuk.us/2018/04/16/the-omen-jerry-goldsmith-2/>
- 27) Maddox, A. (2019). *Musicology: Investigating Music as Organised Sound and Cultural Force*. Sydney Conservatorium of Music, The University of Sydney. <https://sydney.edu.au/music/study-music/study-options/musicology.html>
- 28) Martasudjita, E. P. Dhatu., & Prier, K. (2009). Musik gereja zaman sekarang. *Pusat Musik Liturgi*.
- 29) McCullough, H., & Conway, L. G. (2018). 'And the Oscar Goes to . . .': Integrative Complexity's Predictive Power in the Film Industry. *Psychology of Aesthetics, Creativity, and the Arts*, 12(4), 329–498. <https://doi.org/10.1037/aca0000149>

Ave Satani Motifs Relation to Narrative Thematic Development of the Omen: An Analysis of Oscar-Winning Horror Film Music

- 30) McGuire, C. P. (2018). Unisonance in Kung Fu Film Music, or the Wong Fei-Hung Theme Song as A Cantonese Trans National Anthem. *Ethnomusicology Forum*, 27(1), 48–67. <https://doi.org/10.1080/17411912.2018.1463549>
- 31) Millar, B., & Lee, J. (2021). Horror Films and Grief. *Emotion Review*, 13(3), 171–182. <https://doi.org/10.1177/17540739211022815>
- 32) Miller, H. M. (1973). *History of music*. Barnes & Noble Books; 4th edition. <https://www.amazon.com/History-Barnes-college-outline-COS147/dp/0064600556>
- 33) Miller-Kay, E. (2018). Four-Hand Piano Transcriptions and the Reception of Symphonic Repertoire in Nineteenth-Century Europe. *Malaysian Journal of Music*, 2018, 195–207. <https://doi.org/10.37134/mjm.vol7.11.2018>
- 34) Murphy, K. (2019). *Musicology - Musicology at the Conservatorium*. The Faculty of Fine Arts and Music, The University of Melbourne. <https://finearts-music.unimelb.edu.au/study-with-us/discipline-areas/musicology>
- 35) Musicnotes, Inc. (2021). *Sheet Music Anywhere*. MusicNotes. [musicnotes.com](https://www.musicnotes.com)
- 36) Musicology, D. of. (2019). *Musicology: Listening and Making*. University of Amsterdam. <https://www.uva.nl/en/discipline/musicology/home.html>
- 37) Ngurah, B. (2017). Borobudur. In *Bandung Philharmonic*. Bandung Philharmonic (directed by Robert Nording). <https://youtu.be/ndJqLecP7H0?t=388>
- 38) NIS, L. (2021). Horror Movie Market Share; Where Data and the Movie Business Meet. Nash Information Services, LLC. <https://www.the-numbers.com/market/genre/Horror>
- 39) NIS, L. (2022). The Omen (1976). The Numbers. [https://www.the-numbers.com/movie/Omen-The-\(1976\)#tab=summary](https://www.the-numbers.com/movie/Omen-The-(1976)#tab=summary)
- 40) Opir, H., Yusof, M., Siren, N., Abdullah, L., & Abdullah, W. Y. (2020). Analisa Fatwa Berkaitan Akidah dalam Filem di Makaysia: Sorotan 2005-2018. *Afkar*, 1(1), 137–172.
- 41) Oscar.org. (2021). Experience Over Nine Decades of The Oscars from 1927 to 2021. <https://www.oscars.org/oscars/ceremonies/2021>.
- 42) Palencia-Lefler, M. (2020). Film Music in Advertising: An Intertextual Approach. *Journal of Marketing Communications*, 26(5), 457–474. <https://doi.org/10.1080/13527266.2018.1514318>
- 43) Pratista, H. (2008). *Memahami Film | Understanding Film* (A. D. Nugroho, Ed.). Homerian Pustaka. <http://balaiyanpus.jogjapro.go.id/opac/detail-opac?id=299183>
- 44) Ravn, S. (2022). Exploring Future Narratives and the Materialities of Futures. *Material Methods in Qualitative Interviews with Young Women*. *International Journal of Social Research Methodology*, 25(3). <https://doi.org/10.1080/13645579.2021.1929716>
- 45) Spotify AB. (2021). Listening is Everything. Spotify Free. <https://www.spotify.com/>
- 46) Steffens, J. (2020). The Influence of Film Music on Moral Judgments of Movie Scenes and Felt Emotions. *Psychology of Music*, 48(1), 3–17. <https://doi.org/10.1177/0305735618779443>
- 47) Stock, J. P. J. (2021). Scoring Alien Worlds : World Music Mashups in 21st Century Sci-Fi and Fantasy TV , Film and Video Games. *Malaysian Journal of Music*, 10(2), 13–28. <https://doi.org/https://doi.org/10.37134/mjm.vol10.2.2.2021>
- 48) Sullivan, B. (2019). *Musicology: Principal Methodologies for Musicological Research*. Science JRank. <https://science.jrank.org>
- 49) Tan, S.-L., Spackman, M. P., & Wakefield, E. M. (2017). The Effects of Diegetic and Nondiegetic Music on Viewers' Interpretations of a Film Scene. *Music Perception*, 34(5), 605–623. <https://doi.org/10.1525/MP.2017.34.5.605>
- 50) Tomkins, J. (2014). Mellifluous Terror: The Discourse of Music and Horror Films. In H. M. Benshoff (Ed.), *A Companion to The Horror Films*. John Wiley and Sons, Inc. <https://doi.org/10.1002/9781118883648.ch11>
- 51) Vallerand, F. (1993). Jerry Goldsmith et les Oscars. *Séquences : La Revue de Cinéma*, 164, 70–71. <https://id.erudit.org/iderudit/50083ac>.
- 52) Woodard, S. (2018). Once Upon a Time in Film Scoring: The Omen. *The Frida Sinema*. <https://thefridacinema.org/film-scoring-the-omen/>



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The Effect of Sprint and Speed Ladder Modification Training on the Kick Speed of Mawashi Geri Women's Kempo Professional Athletes



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ABSTRACT: Speed in mawashi geri kicks is a very important element in supporting an achievement in professional athletes. This requires various superior conceptuals in order to optimize mawashi geri kicks in terms of speed, one of which is providing the right training program such as modifying the spint and speed ladder. The purpose of this study was to determine the difference in the effect of sprint modification training and speed ladder training on increasing mawashi geri kicks in Kempo female athletes in Bandar Lampung City. The method used is pseudo-experiment, with pre-test and post-test designs. The sample was used by 30 athletes who were divided into two experimental groups with a division technique using ordinal pairing. The instrument used is the mawashi geri kick test. The results showed that. (1) There is a significant influence on the modification of the sprint technique on the speed of mawashi geri kicks with the results of data $t_{count} = 4.08 > t_{table} = 2.042$ with $\alpha = 0.05$. (2) There is a significant influence on speed ladder training on mawashi geri kick speed with data results $t_{count} = 8.69 > t_{table} = 2.042$ with $\alpha = 0.05$. (3) Speed ladder training has a significant effect on the speed of mawashi geri kicks with the results of data $t_{count} = 2.16 > t_{table} = 2.048$. Thus, it can be concluded that in the final test there was a significant difference in the effect of mawashi geri kick speed between the sprint and speed ladder modification groups. So that speed ladder training is significantly more influential when viewed from the average increase in the final test of the two groups, and the implications of this study can educate trainers that these two training models can have a positive impact on mawashi geri kicks.

KEYWORDS: Sprint, Speed Ladder, Kick, Mawashi Geri, Athlete.

I. INTRODUCTION

Shorinji kempo is a martial art that does not hurt people or opponents themselves, the hand and foot techniques used only cause pain when locking occurs, but when released, the pain will be released along with the lockdown (Nikmah & Suratman, 2019). Shorinji kempo is a fast-reaction martial art that learns and trains techniques, tactics, and movement strategies, hands, feet, head and other limbs practically and effectively in the pattern and form of offensive defense training, with the ability of muscles, brain and conscience in order to master a science of self-defense (Rajidin, 2018). Based on the statement above, shorinji kempo is a sport that requires focus, mind, and concentration and unites the body so that it can harmonize race, heart and mind. There are several basic techniques that must be mastered in kempo martial arts, including one of them is the mawashi geri kick.

Mawashi geri kick is a very important technique, which must be mastered by a kempo athlete because this kick technique can be used to attack opponents or to cut opponents' attacks (Simbolon & Siahaan, 2020). In addition, mawashi geri is also often used to chase points (Cahyati Anggraeni et al., 2019) and even turn the situation around if an athlete gets points behind (Oktasari, Sitepu, & Nurseto, 2018). Mawashi geri's kick technique requires foot agility so that the kick attack is able to hit the target quickly and precisely (Agus, 2018) and quickly return the foot to its original position (Saputri et al., 2022). In addition, the speed of placing the legs into their original position allows the altet to avoid the opponent's counterattack or carry out further attacks (Abriyanti & Wisnu, 2020).

Based on the achievements of Bandar Lampung city kempo athletes, the waydadi dojo in 2017 won achievements in provincial sports pecan tournaments and won 15 gold medals. Bandar Lampung kempo athletes also managed to become the overall champion at the Provincial event. In 2019, Bandar Lampung city kempo athletes participated in the pre-qualification of the National Sports Week, successfully bringing bronze medals in the women's team embu category and the Bandar Lampung

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city kempo men's team team and qualified for the National Sports Week, National Sports Week. In 2021, Bandar Lampung female kempo athletes failed to bring medals due to the obstacles experienced by the Bandar Lampung women's kempo sport were speed on mawashi geri kicks, weak kicks so that they were easily read by opponents and it was difficult to win medals at the national sports week National Sports Week.

In addition, the mawashi geri kick technique is a basic kick technique that is often used, because the kick technique is the fastest and most effective for carrying out attacks during matches (Nugroho, 2019). But most athletes when doing mawashi geri kicks look slow and less fast, this causes athletes' kicks to be easily caught by opponents and avoided by opponents when competing (Darojat, 2019). And also most athletes when doing mawashi geri kicks, the kicks are not right on the intended target, which causes during the match the kicks made by athletes do not get points (Ayubi et al., 2022). And when doing mawashi geri kicks are not fast, which causes the kick to be easily avoided by the opponent. Then when doing a mawashi geri kick, the result of the kick looks slow, so the kick is easily counterattacked by the opponent. This is due to the lack of speed training given by the coach to produce speed against mawashi geri kicks. So based on these problems, it is certainly a big task for a coach to be able to increase the speed of mawashi geri kicks, one of which is to use sprint and speed ladder exercises.

Sprint modification training is a form of modification exercise that combines elements of sprint speed and technique in kicks (Irham, 2021). This exercise is designed to train and improve the quality of work of leg muscles and other muscles that affect in performing kicks in kempo (Gultom et al., 2023), especially mawashi geri kicks. According to (Alhinduan et al., 2018) explained that sprint modification exercises require rhythmic contractions of large muscle groups of the limbs to move the entire body weight at the time of performing the sprint. After that the muscle must contract again by kicking (Juliyanto, 2016). Kicks must be done quickly, agile and determined by anaerobic capacity (Cakrawijaya, 2021). Repetitive motion cycles that take place constantly at high speeds will cause a pattern of automation of central neural processes (Arifin, 2019). Exercises to improve kicking ability are principled that the muscle must contract repeatedly quickly (Abdurrochim, 2018). Muscle coordination will have an influence on increasing the speed of special movements and will contribute well to movement skills, if athletes can improve the efficiency of motion mechanics (Fantri & Kibadra, 2019). Therefore sprint modification exercises and techniques can be used to improve the speed ability of mawashi geri kicks.

Sprint modification training is carried out in the kempo training arena, or in a place that has a flat structure and the size of the area resembles a kempo rink field. In this modified exercise, kempo athletes are required to bring out their maximum abilities in the training process, considering that this exercise is to improve the ability of mawashi geri kicks. Sprints are done with maximum power, as well as kicks are done quickly. This is in line with the research researched by (Arifin, 2019) in his research which examined the effect of sprint training, so that the results found that there was a significant influence on sprint training on the explosive power of the leg muscles of the Football School athletes.

According to (Bagia, 2016) suggests that to be able to increase speed, agility and coordination, one of them can be by using the Speed Ladder tool. Speed Ladder is a form of physical exercise whose function is to train foot speed, foot agility and synchronize motion in a balanced manner (Oktasari, Sitepu, Nurseto, et al., 2018). Speed Ladder can also increase kick speed (Fahmi et al., 2020). Speed Ladder is a form of jumping training equipment using one or two legs by jumping over a ladder-shaped rope placed on the floor or ground. Speed Ladder training is also included in direct speed, which is a training method for technique, coordination, and step frequency (Hadjarati et al., 2022).

According to (Herlina & Burhan, 2022) the programming presented should be measured at the total training volume for all core, balance, reactive, and resistance components in an exercise. The success of strenght, agility, and quickness programs also depends on the core, balance, and reactive ability of the athlete (Bili & Bete, 2021). The higher this ability, the better and safer the results the athlete will enjoy from his program (Juniar et al., 2023). All exercises must be performed with proper technique and kinetic chain control, to minimize the risk of injury (Aprianti & Ilham, 2022). Speed Ladder is a form of physical exercise equipment that resembles a ladder child placed on a flat plane or floor. This is in line with research researched by (Irham, 2021) in his research which examines the effect of speed ladder training on speed in Tuban soccer players. So that in the study it can be concluded that there is also a significant influence on the exercise on speed. Therefore, researchers hypothesize that the application of sprint and speed ladder training can improve mawashi geri kicks in female professional athletes in Bandar Lampung city.

Mawashi geri kick speed is a biomotor component that greatly influences the performance of kempo athletes in matches (Aprianti & Ilham, 2022). Speed is also the potential of the body that is used as capital or very supportive in carrying out movements (Kusmirantini & Imanudin, 2019). In pencak silat matches, speed can be seen in carrying out attacks, both kicks when getting attacks from opponents such as dodging or countering opponents' attacks (Manullang, 2017). Mawashi Geri's kick is the dominant attack in kempo matches. With that kick speed is needed in kempo matches to gain value.

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In kempo matches, kick speed can be realized when athletes make attacks and counter attacks from opponents. Speed in carrying out attacks or countering attacks from opponents such as kicks must be done to get points, because in the National Deliberation it is stated that for attacks used to obtain value, one of them is steady and powerful (Purba, 2017). With that, the kick must be fast so as not to be caught and dropped by the opponent (Baramuli et al., 2020). Based on some of the opinions above, it can be concluded that kempo athletes must have good kick speed quality so that every kick made is not easily caught by the opponent and then dropped.

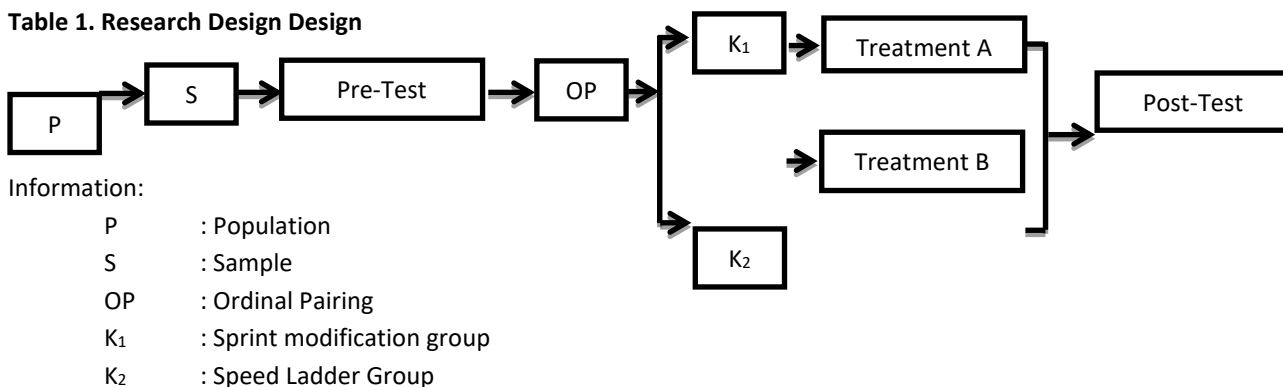
II. METHOD

The type of research method used in this study is experimental research, with quantitative data where the experimental research method is a series of experimental activities with the aim of investigating something or problem so that results are obtained (Purba, 2017). Therefore, in the experimental method there must be factors that are tested, in this case the factors tested are sprint modification exercises and speed ladder exercises to know the effect on the speed of mawashi geri kicks.

In this research process was carried out at Dojo Way Dadi Kempo Bandar Lampung City, where this study found a total population of 30 athletes and researchers took samples of 30 athletes on the basis of sampling using the Total Sampling method. In this case, the factors tested were sprint modification exercises and speed ladder exercises to determine the effect on the speed of mawashi geri kicks in kempo female athletes in Bandar Lampung City using instruments in the form of tools called pacing pads and stop watches.

The research design used in this study was pre-test-post test design. This design has a pretest before treatment and posttest after treatment so that the results of treatment can be known more accurately, because it can compare the results before treatment. The research design can be described as follows.

Table 1. Research Design Design



The instrument in the mawashi geri kick test has been researched by (Simbolon & Siahaan, 2020) which shows that the t_{count} value $> t_{table}$ ($8.86 > 2.31$) and is declared valid. Then for reliability, namely using the pearson correlation of moment products with values $r_{xy} = 0.94 > 0.7$ and declared reliable. Thus the instruments in this study have been valid and reliable. Data obtained from the results of research in the field are analyzed using quantitative analysis and sampling techniques are generally carried out randomly, data collection using research instruments, quantitative or statistical data analysis with the aim of testing hypotheses that have been set, and analyzing the data using normality tests, homogeneity tests, and hypothesis tests that will be designed using SPSS version 25.

III. RESULT

Based on descriptive statistical tests of data types consisting of sum, mean, standard deviation and variance in each experimental group and control group. This type of data is used to analyze the difference t test Based on the results of the study, the description of the data can be described as in the following table.

Table 2. Description of Research Results Data

Information	Engineering Sprint Modification Group		Speed Ladder Group	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Average	17,33	17,87	16,93	20,07

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Standard Deviation	3,68	3,40	3,59	2,37
Min.	12	13	11	17
Max.	25	25	25	25

Based on the data above, a group of technical sprint modifications was obtained with an average value of 17.33 and obtained values at a standard deviation of 3.68, as well as a minimum value of 12, and a maximum of 25. With this technique sprint modification group, improved on the final test with an average score of 17.87 and obtained a score at a standard deviation of 3.40, as well as a minimum value of 13, and a maximum of 25.

While the initial test data of the speed ladder group with an average value of 16.93 and obtained a value at a standard deviation of 3.68, as well as a minimum value of 11, and a maximum of 25. With this, the speed ladder group improved in the final test with an average value of 20.07 and obtained a value at a standard deviation of 2.37, as well as a minimum value of 17, and a maximum of 25. Comparison of initial tests and final tests in the engineering sprint modification group and speed ladder illustrated with the bar chart below as follows.

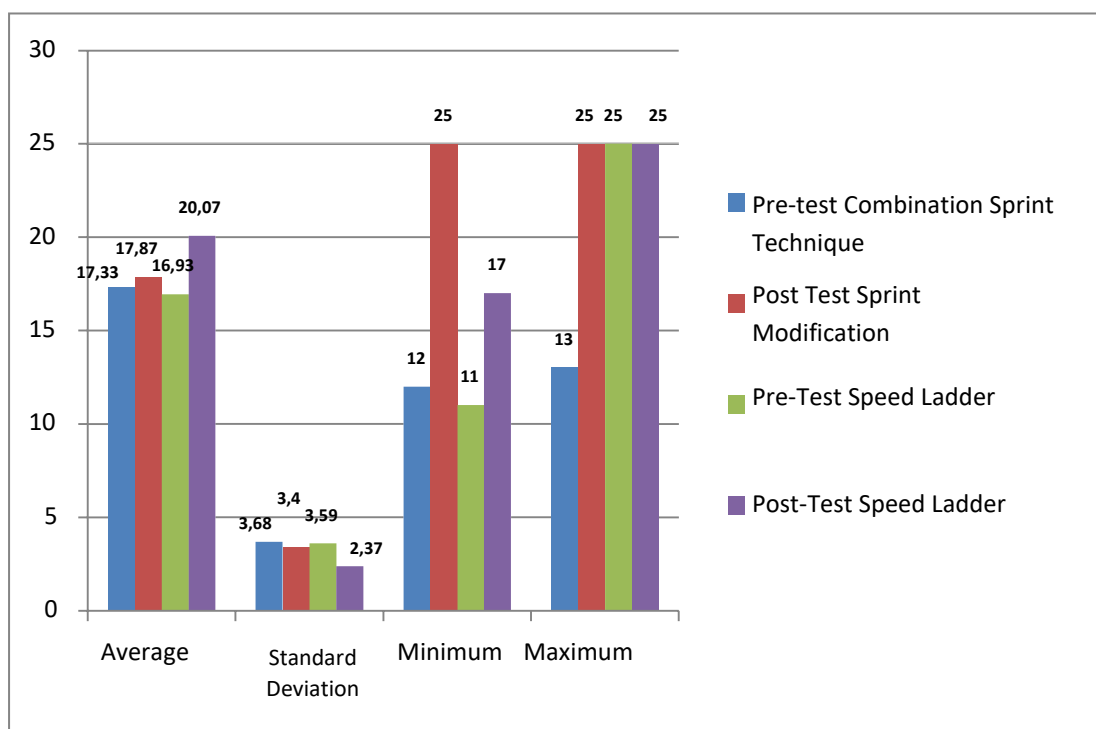


Figure 1. Comparison bar chart of Pre-test Post-Test of each Group

The normality test is a test to find out whether or not the distribution is normal distribution. The step before testing the hypothesis is to first test the requirements of data analysis with a normality test, namely using the Lilliefors Test. The normality test results are as follows.

Table 3. Normality Test

No.	Variable	L _{Count}	L _{table}	Conclusion
1	Pre-Test Group Sprint modifications	0,208	0,221	Usual
2	Post-Test Group Sprint modifications	0,181	0,221	Usual
3	Pre-Test Group Speed ladder	0,198	0,221	Usual
4	Post-Test Group Speed ladder	0,161	0,221	Usual

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Furthermore, the homogeneity test is carried out to obtain information whether the two sample groups have homogeneous variance or not, Below are the results of homogeneity calculations presented in the following table.

Table 2. Homogeneity Test

No.	Variable	L _{Count}	L _{Table}	Conclusion
1	Pre-Test Group Sprint modifications and <i>speed ladder</i>	1,046	2,40	Homogeneous
2	Post-Test Group Sprint modifications and <i>speed ladder</i>	2,05	2,40	Homogeneous

To find out which variables have the same variance, the test carried out is by comparing the largest variance and the smallest variance from each group so that the calculated F value is obtained with the test criteria, if the test results obtained $F_{Count} < F_{Table}$, then both data are homogeneous or come from the same variance. Thus, in the test results obtained $F_{Count} < F_{Table}$ then the two variances are homogeneous.

IV. RESULT

In this study, a significant increase was obtained in the group studied. The provision of sprint and speed ladder modification treatment has a significant influence on the kick speed of mawashi geri female kempo athletes in Bandar Lampung City. Mawashi Geri's kicks increased after being given a modified sprint treatment which was shown by a post-test value that was greater than the pre-test value. This training process is designed to train and improve the quality of work of the leg muscles and other muscles that affect in performing mawashi geri kicks. According to (Sepriadi, 2018) suggests that sprint modification exercises require rhythmic contractions of large muscle groups of the legs to move all body weight during sprints. The main goal is to increase the muscle in contracting in performing kicks and is done repeatedly in a careful process by increasing the load (Nenggar, 2016).

At the completion of the research process starting from taking the initial test to the final test, the research results were obtained among others as follows. The effect of technical sprint modification (X1) on the kick speed of mawashi geri female kempo athletes Bandar Lampung City (Y) which shows that there is a significant influence between the two variables mentioned above. In achieving the goals implemented during training, an optimal training program from a trainer is needed. Thus, the success or failure of the goals to be achieved will be influenced by the application of training principles needed in making exercise programs, such as technique sprint modification exercises. This is a novelty in research that the principle of exercise needed is to create an effective exercise program, one of which is the technique sprint modification exercise.

While in the speed ladder training group, according to the results of data analysis, it can be concluded that there is a significant influence of the speed ladder on the kick of mawashi geri female kempo athletes in Bandar Lampung City. Speed ladder is jumping using one or two legs using physical exercise equipment that resembles a ladder child placed on a flat plane or floor done with proper technique and kinetic chain control, to minimize the risk of injury (Juliyanto, 2016). By practicing using a speed ladder, agility will help improve various aspects of basic sports movements such as improving body balance, reflex movements, muscle endurance, reaction speed and coordination between body parts (Cakrawijaya, 2021).

Speed ladder training can be used for mawashi geri kick speed, especially at reaction speed (Ayubi et al., 2022). Reaction speed in athletes is a person's ability to answer stimuli in the shortest possible time (Gultom et al., 2023). Thus, based on the data that has been described, it can be described that the speed ladder group has a greater increase than the technique sprint modification exercise group. So the comparison results of the two groups showed that the speed ladder group was larger than the engineering sprint modification group. This shows a novelty in this study that in speed ladder training agility continuously will help in improving the nervous system, body stamina, and leg muscle strength.

V. CONCLUSIONS

Research conducted on kempo female athletes in Bandar Lampung City by conducting technical sprint modification exercises and speed ladder exercises to improve mawashi geri kicks concluded that the results of the t test analysis showed that the technique sprint modification exercise had a significant influence on the results of mawashi geri kick speed in Bandar Lampung City kempo female athletes with a calculated t value = 4.08 > t table = 2.042, Furthermore, the results of the t test analysis showed that the speed ladder training had a significant influence on the results of the mawashi geri kick speed in Bandar Lampung City kempo female athletes with a calculated t value = 8.69 > t table = 2.042, and the results of the t test analysis

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showed that the speed ladder training was significantly greater on the speed of mawashi geri kicks in Bandar Lampung City kempo female athletes with a calculated t value = 2.16 > t table = 2.048. So the implication of this research is for trainers to make the speed ladder training method and apply it to increase the speed of mawashi geri kicks.

REFERENCES

- 1) Abdurrochim, M. (2018). The Effect of Sprint Training in Sand and Sprints in Hard Places on the Sickle Kick Speed of Psht Twig Palaran Students in 2021. *Cendekia (Jurnal Pendidikan Dan Pengajaran)*, 6(c), 75383.
- 2) Abriyanti, B., & Wisnu, H. (2020). The influence of audiovisual media (video) on Mawashi Geri's kicks in extracurricular karate at Sman 1 ward. *Jurnal Pendidikan Olahraga Dan Kesehatan*, 8(1), 121–124.
- 3) Agus, A. (2018). The Effect of the Acceleration Sprint Training Method on the Running Speed of Wijaya Men's Football Players in Padang City. *Jurnal Sporta Sainika*, 1(2), 88–99.
<http://sportasaintika.ppj.unp.ac.id/index.php/sporta/article/view/34>
- 4) Alhinduan, M. H., Simanjuntak, V., & Hidasari, F. P. (2018). The Effect of Training Using Chair Media on Mawashi Geri's Kicks. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa*, 7(4).
- 5) Aprianti, S., & Ilham, Z. (2022). Development of Mawashi Geri Kick Training Aids at the Binjai Field Karate Dojo Club. *Jurnal Ekonomi Teknologi & Bisnis*, 1(3), 116–123.
- 6) Arifin, Z. (2019). The Effect of Game Training and 50 Meter Sprints on Vo2Max Increase of Ssb Kakimas Dampit Football Athletes, Malang Regency Age Group 14-15. *Jp.Jok (Jurnal Pendidikan Jasmani, Olahraga Dan Kesehatan)*, 3(1), 103–114. <https://doi.org/10.33503/jp.jok.v3i1.561>
- 7) Ayubi, R. T., Rahayu, E. T., & Siswanto. (2022). The Effect of Speed Ladder Training on Agility and Speed in Futsal Extracurricular Activities. *Jurnal Porkes (Jurnal Pendidikan Olahraga Kesehatan & Rekreasi)*, 5(2), 551–561. <https://doi.org/10.29408/porkes.v5i2>
- 8) Bagia, I. M. (2016). Correlation of Body Weight and Leg Length to Karate Kick Speed Mawashi Geri Jodan Student of Smp Negeri 11 Denpasar. *Jurnal Pendidikan Kesehatan Rekreasi*, 6(August), 128.
- 9) Baramuli, M. I., Wiyanto, A., & Widiyatmoko, F. A. (2020). Analysis of Mawashi Geri's Kick Motion in Karate at the Dojo of Public High School 1 Ban Brebes. *Journal of Sport Coaching and Physical Education*, 5(1), 1–7. <https://doi.org/10.15294/jscpe.v5i1.36560>
- 10) Bili, L. D., & Bete, D. E. M. T. (2021). Running 1 Kg on 100 M Legs 4 Repetitions Increase Mawashi Geri Dojo Kick Speed St. Theresia Junior High School. *Gelombang Olahraga: Jurnal Pendidikan Jasmani Dan Olahraga (JPJO)*, 4(2), 150–161. <https://doi.org/10.31539/jpjo.v4i2.1727>
- 11) Cahyati Anggraeni, D., Muhammad, M., & Sulistyarto, S. (2019). The effect of ladder drill slaloms and ladder carioca training on agility and speed. *Multilateral Jurnal Pendidikan Jasmani Dan Olahraga*, 18(2), 87–93. <https://doi.org/10.20527/multilateral.v18i2.7618>
- 12) Cakrawijaya, M. H. (2021). The Effect of Hurdle Jump Training on Mawashi Geri's Karate Ability in Megarezky Muhammad University Students. *Indonesian Journal of Physical Activity*, 1(1), 54. <https://ijophya.org/index.php/ijophya/article/view/3>
- 13) Darajat, F. (2019). The effect of speed ladder training on increased agility in extracurricular table tennis participants. *Indonesia Performance Journal*, (1)(1), 33–38. <http://journal2.um.ac.id/index.php/jko>
- 14) Fahmi, A., Yunus, M., Komarudin, K., & Wali, C. N. (2020). MAPHTRAS Basic Sprint Technique Training Model in Beginner Running Athletes. *Indonesian Journal of Sport and Physical Education Universitas Negeri Malang*, 1(2), 47–53.
- 15) Fantri, Y. M., & Kibadra. (2019). The effect of acceleration sprint training on 100-meter running performance. *Jurnal Pendidikan Dan Olahraga*, 2(5), 1–3.
- 16) Gultom, Y. F., Nugroho, S., & Sumarno, A. (2023). The Effect of Training Using Punching Bags on Improving the Results of Ushiro Mawashi Geri's Kicks in Karate Extracurricular Activities at SMPN 1 Cikampek. *Journal on Education*, 05(03), 5871–5882. <https://jonedu.org/index.php/joe/article/view/1350%0Ahttp://jonedu.org/index.php/joe/article/download/1350/1069>
- 17) Hadjarati, H., Massa, R. S., & Haryanto, A. I. (2022). Training Using Ankle Weight and Rubber Resistance: Impact on Mawashi Geri's Kick Speed. *JSES: Journal of Sport and Exercise Science*, 5(2), 72–78. <https://journal.unesa.ac.id/index.php/jses/article/view/18714>
- 18) Herlina, & Burhan, Z. (2022). The Combination of Balance Training and Core Training is Better Than Balance Training Alone in Increasing the Frequency of Kicks Mawashi Geri Karate Dojo Athlete SMAN 2 Praya. *Journal of Classroom*

The Effect of Sprint and Speed Ladder Modification Training on the Kick Speed of Mawashi Geri Women's Kempo Professional Athletes

Action Research, 4(4).

- 19) Irham, A. (2021). The Effect of Speed Ladder Drill to Increase Speed and Agility in K-U 16 Soccer Privte SSB SAA (Sul Khan Arif Academy) Tuban Players. *Jurnal Prestasi Olahraga*, 4(12), 141.
- 20) Juliyanto, O. D. (2016). The Effect of Icky Shuffle Ladder Drill Training on Speed Increase. *Jurnal Kesehatan Olahraga*, 4(4), 45–52.
- 21) Juniar, D. T., Suherman, A., Tarigan, B., & Mahendra, A. (2023). Emotional Intelligence Positively Affects Student ' s Social Skills in Physical Education. *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani*, 7(2), 326–333.
- 22) Kusmirantini, S. Y., & Imanudin, I. (2019). The Relationship of Limb Power with the Results of Mawashi Geri and Ushiro Mawashi-Geri's Kicks in Karate. *Jurnal Terapan Ilmu Keolahragaan*, 4(1), 52–54.
<https://doi.org/10.17509/jtikor.v4i1.10136>
- 23) Manullang, J. G. (2017). The relationship between pelvic joint flexibility and Mawashi Geri's kicking ability in karate at Fitra Abdi High School Palembang. *Jurnal Prestasi*, 1(2). <https://doi.org/10.24114/jp.v1i2.8066>
- 24) Nenggar, A. H. (2016). Comparison of Mawashi-Geri's Lightest Kick Movement Analysis and Heaviest Weight. *Bravo's Jurnal*, 4(1).
- 25) Nikmah, L. A., & Suratman. (2019). Profile of Mawashi Geri's Kick on Young Men's Athlete Shorinji Kempo Dojo Satria Muda Semarang. *Journal of Sport Coaching and Physical Education*, 4(2), 116–124.
- 26) Nugroho, wahyu P. (2019). The Effect of Uphil Running Training on the Ability of Students Participating in Athletic Extracurricular Athletics at SMA Negeri 2 Wonosobo, Wonosobo Regency. *Jurnal Pendidikan Jasmani Kesehatan Dan Rekreasi*, 8(1), 1–13.
- 27) Oktasari, R., Sitepu, A., & Nurseto, F. (2018). The Effect of Limb Power and Flexibility on the Results of Mawashi Geri's Kicks. *Journal Physical Education Health and Recreation*, 1(3), 1–10.
- 28) Oktasari, R., Sitepu, A., Nurseto, F., & Tarigan, H. (2018). The Effect of Limb Power and Flexibility on the Results of Mawashi Geri's Kick State High School Karate Extracurricular Student 2 Kalianda. *Physical Education, Health and Recreation*, 3(1), 53–59.
- 29) Purba, P. H. (2017). Limb muscle explosive power and kick speed of mawashi geri. *Jurnal Google Cendiakia*, 47–51.
- 30) Purba, P. H. (2017). The Relationship of Flexibility and Agility to Mawashi Gery Chudan's Kick Speed at Karateka College Wadokai Dojo Unimed. *Jurnal Prestasi*, 1(1), 11–16. <https://doi.org/10.24114/jp.v1i1.6492>
- 31) Rajidin, R. A. (2018). Comparison of kicking exercises using ankle weights and tire rubber against Mawashi Geri's kick speed. *Jurnal Pendidikan Olahraga*, 7(1), 68–74.
- 32) Saputri, E., Sugihartono, T., & Prabowo, A. (2022). The Effect of Spring Style Training Media on the Results of Mawashi Geri's Kick Speed for Shoto-Kai Athletes in Bengkulu City. *Sport Gymnastics: Jurnal Ilmiah Pendidikan Jasmani*, 3(2), 181–192. <https://doi.org/10.33369/gymnastics>
- 33) Sepriadi. (2018). Contribution of Limb Muscle Power and Balance to Mawashi Geri Kick Kempo Athlete. *Jurnal Media Ilmu Keolahragaan Indonesia*, 8.
- 34) Simbolon, R. F., & Siahaan, D. (2020). Development of Mawashi Geri Kick Speed Test Instrument in Karate. *Jurnal Prestasi*, 4(2), 49. <https://doi.org/10.24114/jp.v4i2.21585>



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The Impact of Physical Activity and Psychological Health of Indonesian Education University Students during Covid-19 Pandemic



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ABSTRACT: The purpose of this study was to examine differences in levels of physical activity and psychological health based on the gender of UPI students during the Covid-19 pandemic. The method used is quantitative with research design comparative causation. The population in this study was active students at the Indonesian University of Education. The sample in this study amounted to 345 people who were taken using the technique cluster random sampling. The instrument used in this study was the GPAQ (Global Physical Activity Questionnaire) to measure the level of physical activity and PGWBI (Psychological Well Being Index) to measure psychological health. The research was conducted online by distributing questionnaires on the Google form and then spreading them on social media. The research analyzed using Mann Whitney u and independent sample t test. The statistical test results show that the data shows a sig value for the physical activity variable of $0.000 < 0.0$, meaning that there is a significant difference regarding physical activity based on the gender of Indonesian University of Education students during the Covid-19 pandemic. With an average value of 203.76 for men and 151.22 for women, the level of physical activity for men is better than for women, and the sig value for the psychological health variable is $0.000 < 0.05$, meaning that there is a significant difference significant regarding psychological health variables based on the gender of Indonesian University of Education students during the Covid-19 pandemic. With an average score of 72 for men and an average score of 65 for women, the psychological health level of men is better than women.

KEYWORDS: Physical Activity, Psychological Health, GPAQ, PGWBI, Psychology.

I. INTRODUCTION

Physical activity is any activity that uses body movement and can increase the pulse and respiration (Australian Government Department of Health 2013), physical activity can be said to be one of the most important aspects of health and fitness from child to adult (Kim et al. 2010). Physical activity has many benefits both physically and mentally, including increasing the work of the heart so that its pumping ability can minimize cardiovascular disease, and avoiding atherosclerosis by lowering blood lipid levels (Busing and West 2016). Several studies have also shown that physical activity is successful in restoring psychological health and happiness, and has the potential to counteract symptoms of mental health disorders such as depression and anxiety (Romero-Blanco et al. 2020). Physical activity has many benefits both physically and mentally, including increasing the work of the heart so that its pumping ability can minimize cardiovascular disease, and avoiding atherosclerosis by lowering blood lipid levels (Busing and West 2016). Several studies have also shown that physical activity is successful in restoring psychological health and happiness, and has the potential to counteract symptoms of mental health disorders such as depression and anxiety (Romeo et al. 2010). Unhealthy behaviour, especially physical activity, is a factor causing health problems in adolescents and adults, including physical activity related to cardiovascular disease, mild to moderate depression, and decreased anxiety. Has an impact on lower levels of anxiety and depression (Bowe et al. 2019).

At the end of December 2019, a case of an unknown infectious disease occurred in Wuhan, the largest metropolitan area in China's Hubei province. This disease is caused by a new virus called coronavirus with severe respiratory symptoms. Therefore, China is responsible for the coronavirus disease 2019 (COVID-19) as announced by the World Health Organization (WHO) on 11 February 2020 (World Health Organization 2021). Coronavirus is a group of viruses capable of infecting the respiratory tract. In most cases, this virus will only cause lower respiratory infections, such as the flu. However, this virus can also cause severe respiratory infections, such as lung infections (pneumonia). The impact of the epidemic has made it difficult to carry out

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activities, due to social restrictions and closed access to sports activities. Therefore, there is concern about the lack of access to regular exercise or exercise routines during a pandemic which results in weakened immunity and physical fitness, by starting or exacerbating existing problems with their health (Maugeri et al. 2020).

Mental disorders can be precipitated or exacerbated by the pandemic, including mood disorders, anxiety disorders, and post-traumatic stress disorder (Locke et al. 2015). Post-traumatic stress can be triggered by pandemic-related stressors such as widespread exposure to death, including the death of a loved one. Although there is little data on post traumatic stress events from pandemic influenza, reports indicate that some survivors have recurrent, vivid, and detailed memories of the causes of pandemic-related stress, indicating symptoms re-experiencing post-traumatic stressors (Taylor 2019). The results showed that isolation had caused a significant reduction in energy expenditure and physical activity in all age groups, especially men. This has a negative impact on psychological health (Maugeri et al. 2020). The research was also carried out by the Indonesian Association of Psychiatric Doctors, and the result was that 64.3 percent of 1,522 respondents had psychological problems of anxiety or depression after conducting self-checks via online regarding mental health due to the impact of the COVID-19 pandemic. Of the 1,522 respondents, the majority were women, 76.1 percent, with a minimum age of 14 years and a maximum of 71 years (Ulfa, Mikdar, and Raya 2020).

The pandemic also had an impact on students including changes in learning behaviour, social behaviour, and health behaviour. Learning behaviour is adapted to using technology, because lectures are conducted online, but there are signal limitations in technology, which are not suitable for actual learning (Ali et al. 2021). The influence of social behaviour in the form of overprotective behaviour tends to be suspicious when other people are in poor health. Changing healthy behaviour in the form of reducing diet and exercise habits (Ulfa et al. 2020). Based on the problems regarding the lack of physical activity and the declining psychological health of students during the Covid-19 pandemic, it is therefore necessary to have solutions to these problems so that physical health and psychological health are maintained. Many studies have illustrated that exercise / physical activity can counteract long-term metabolic disorders, bone, muscle, joint pathology, and neurodegenerative diseases. Physical activity can also improve health, which works on the heart, blood circulation and respiratory function as well as immunity (Maugeri et al. 2020). Many studies also state that physical exercise can efficiently improve mental health and well-being, and can reduce impaired mental health, for example feeling depressed and anxious (Romeo et al. 2010).

II. MATERIAL AND METHODS

The design in this study uses a comparative causal design, namely the basis involves two or more different groups in several interesting variables and compares them with other variables or variables. The sample in this study was determined to use the Cluster Random Sampling, the population in this study was all university students with an Indonesian education consisting of 8 faculties with reference to the Michael and Isaac tables, so the total sample was 345 people.

The instruments in this study are:

1. Global Physical Activity Questionnaire (GPAQ)

The GPAQ was published and developed by WHO which contains 16 questions and aims to measure or determine a person's level of physical activity. The questionnaire used in the study adopted the GPAQ questionnaire, with high reliability test results of Cronbach's Alpha $\alpha = 0.67-0.73$ and moderate validity $r = 0.48$, the GPAQ instrument was used because its validity and reliability have been recognized globally in 9 countries in the world. About 50 developing countries now use the GPAQ for physical activity data collection. The GPAQ is a physical activity monitoring instrument suitable for developing countries (Armstrong & Bull, 2006). The results of the GPAQ calculation use the Metabolic Equivalent of Task (MET) unit, which is a unit that measures the ratio of the amount of energy needed by the body during physical activity

2. Psychological Well Being Index (PGWBI)

The PGWBI questionnaire is a measurement tool to determine the level of psychological well-being subjectively. The questionnaire used in the study adopted the PGWBI questionnaire. In more detail, this questionnaire assesses self-representation or emotional state to determine the level of well-being. The PGWBI consists of 22 questions with a score of 0-5 with the highest total score of 110. Some of the aspects in this questionnaire are anxiety, depression, positive well-being, self-control, general health, and vitality. The validity of the PGWBI was evaluated in many studies.

In this study, the data collection technique was carried out online by distributing questionnaires via the Google form and distributing them in several media such as WhatsApp, Instagram, and Twitter.

Data analysis in research serves as a test for research hypothesis answers. Data analysis in this study used SPSS (Statistic Packet for Social Science) version 25. First, the normality test was analyzed using Kolmogorov Smirnov to determine the value of the normal distribution. Because the sample is more than 50 people, the two data homogeneity tests used are the results of the

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test levene’s Test to test the hypothesis of the same variance, in other words, this test relates to the third category of similarities and differences in data, namely testing the hypothesis using an independent sample t test.

III. RESULT AND DISCUSSION

Result

Table 1. Percentage of Physical Activity Levels

MET	Category	Sample	Percentage (%)
>3000	High	49	15%
600-3000	Moderate	74	21%
600<	Low	222	64%
Mean		3226 MET	

From the data above it can be seen that during the Covid19 pandemic in Indonesia, the physical activity of UPI students was 15% higher, 21% moderate, and 64% lower. This shows that most UPI students rarely do physical exercise during the Covid19 pandemic in Indonesia.

Based on the results of the descriptive analysis, the average MET of UPI students is 3226 MET. In this category the level of physical activity of students is high, because in the GPAQ category if the MET is more than 3000 then it is classified as in the category of high physical activity.

Table 2. Percentage Level of Psychological Health

Value	Category	Sample	Percentage (%)
73-110	High	133	38%
61-72	Moderate	113	32%
0-60	Low	99	30%
Mean		68	

Based on the data above, it is known that 38% of UPI students' psychological health during the Covid-19 pandemic were high, 32% moderate, and 30% lower. This shows that during the Covid-19 pandemic in Indonesia, most UPI students were in good psychological health.

Based on the results of the percentage descriptive analysis, the average score of UPI students is 68. In this category, the psychological health status of UPI students is moderate, because scores in the PGWBI category are between 61-72 which are included in the moderate psychological health category.

Table 3. Normality Test

Variable	Statistics	df	sig.	Information	Conclusion
GPAQ	0.319	345	0.000	Ho rejected	Abnormal
PGWBI	0.048	345	0.052	Ho accepted	Normal

Based on the table above, it is known that the normality test results of the data are used Kolmogorov-Smirnov it was found that the physical activity of UPI students was not normally distributed because the significance value was 0.000 where the value was less than 0.05. Because the data is not normally distributed, it can be concluded that the data analysis uses a non-parametric test.

Based on the table above, it is known that the normality test results of the data are used Kolmogorov-Smirnov it was found that the psychological health of UPI students was normally distributed because the significance value was 0.052 where the value was more than 0.05. Because the data is normally distributed, it can be concluded that the data analysis uses a parametric test.

Table 4. Homogeneity Test

No	Variable	Levene Statistik	Df 1	Df 2	sig.
1	Physical Activity	4.566	1	343	0.033
2	Psychological Health	0.021	1	342	0.885

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From the results of Levine's statistics for a physical activity value of 4.566 with a Sig. 0.14 is less than 0.05, the data comes from populations that have unequal variances, meaning that the data in this study are not homogeneous.

Based on Levine statistics, the value for psychological health is 0.21 with Sig. 0.885 is greater than 0.05, the data comes from populations that have the same variance, meaning that the research data is homogeneous.

Table 5. Mann-Whitney U Test (Physical Activity)

Group	N	Mean	Std.Deviasi	Sig.
Men	143	203,76	29.138	0.000
Women	202	151,22	30.547	

Based on the statistical test results in the table above, the data shows a sig value for the physical activity variable of 0.000 <0.05, meaning that there is a significant difference regarding the physical activity variable based on the gender of Indonesian University of Education students during the Covid-19 pandemic. With an average score of 203.76 for men and 151.22 for women, the level of physical activity of men is better than women.

Table 6. Independent Sample T Test (Psychological Health)

Group	N	Mean	Std.Deviasi	Sig.
Men	143	72	13.947	0.000
Women	202	65	15.052	

Based on the statistical test results in the table above, the data shows a sig value for the psychological health variable of 0.000 <0.05, meaning that there is a significant difference regarding the psychological health variable based on the gender of Indonesian University of Education students during the Covid-19 pandemic. With an average score of 72 for men and an average score of 65 for women, the psychological health level of men is better than that of women.

DISCUSSION

Based on the results of the data that has been analyzed, then we discuss the results of the study which aims to determine differences in levels of physical activity and psychological health of Indonesian University of Education students based on gender during the Covid-19 pandemic. The results of the data processing of this study indicate that there are significant differences in the level of physical activity between male and female students at the Indonesian University of Education, where male physical activity is greater than female. This is in accordance with research in Italy that the level of physical activity for men is higher than for women (Maugeri et al. 2020). Previous research also revealed that physical activity or exercise is more often done by men than women (Stockwell et al. 2021). This can happen because of differences in motivation between men and women to do sports (Kilpatrick, Hebert, and Bartholomew 2005). Although both men and women enjoy playing sports, such as volleyball, more men than women enjoy passionate and competitive team sports, there are also differences between men and women. For example, the problem of losing weight is an important motive for active exercise among women. Excess body weight is significantly correlated among women (Romero-Blanco et al. 2020). The level of physical activity in each gender will of course be different. Confidence (self-efficacy) The perceived and benefits of physical activity in women are significantly lower than in men. For men, statistically, the physical activity carried out is good and according to recommendations. However, for women, the benefits and barriers as well as self-confidence significantly explain their participation in physical activity which is very low and not according to what has been recommended (Kim et al. 2010).

Differences in physical activity patterns of time and intensity were also considered. More men participate in strenuous sports and team sports and more men than women take part in sports competitions. On the other hand, women are more involved in recreational activities only, activities that are less vibrant. Also, more women than men spend time on everyday tasks combined with physical activity, such as walking or cycling to work. Similar differences in physical activity patterns between adult men and women have been found in other studies and may therefore reflect the effects of gender differences. Research has found that the relationship between physical inactivity and psychological well-being is greater in the female group. Previous results have examined gender differences between measures of physical fitness and life satisfaction, which are one of the central constructs in the field of positive psychology, and most do not reflect differences regarding sex and life satisfaction. This evidence shows

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that the lack of physical activity levels can largely affect the mental well-being of women (Busing and West 2016; Maugeri et al. 2020).

Understanding the different risks of inactivity for men and women will facilitate the promotion of physical activity habits in the future. This can be done by providing information about the health effects of physical activity, by stimulating participation in activities that are easily accessible, and by providing childcare facilities at a number of sporting activities venues (Maugeri et al. 2020).

Judging from the results of the PGWBI questionnaire data processing, it shows that the instrument is suitable for measuring stress and fatigue, as well as measuring the impact of interventions on well-being and quality of life (Lundgren-Nilsson et al. 2013). The results of his research showed that there were significant differences in psychological health between male and female students at the Indonesian University of Education, where the male score was greater than the female. This is also exactly the same as a university study in Hungary that men's psychological health is better than women's (Lukács 2021). Psychological health can be influenced by several factors, in addition to physical activity that affects psychological health including parents having positive traits, a conducive environment, healthy and good mental health of parents, one's social support can also be one of the factors that affect one's mental health (Hertwig et al. 2004).

Factors for mental health disorders in men are difficult to know because men tend not to ask for help and tend to vent by drinking alcohol and consuming illegal drugs, while women tend to vent by showing emotional expression (Blair, Siddiqi, and Frank 2018). The design of the male brain is devoid of feelings, but this does not mean that men are devoid of empathy. According to research, when someone expresses their feelings, empathy for men will appear. The fact is that men have more emotional reactions than women, but when men become aware of their feelings, men choose not to behave because of social stereotypes. Men prefer to keep things cool and look cool. Similarly, women seem to have a stereotype that it must be men to actively promote interpersonal relationships. Women tend to be more sensitive than men, but this doesn't mean that women can't actively promote a relationship. In general, men can make decisions without being influenced by emotions, whereas most women usually consider other factors related to emotions, which are usually ignored by men. In essence, women prioritize feelings, while men prioritize logic in thinking (Callow et al. 2020).

IV. CONCLUSION

There are differences in the level of physical activity in male and female students during the Covid-19 Pandemic. There were differences in the psychological health of male and female students during the Covid-19 Pandemic. The results of this study can be used as evaluation material for future research. In addition, it can also be used as a reference for further research. The results of this study can be useful for readers, especially when discussing physical activity and mental health. In this study, it is far from perfect, and different samples need to be developed and studied further with the participation of the various parties concerned. And more journal references and more varied.

REFERENCES

- 1) Ali, Ajmol, Claire Mclachlan, Owen Mugridge, Tara Mclaughlin, Cathryn Conlon, and Linda Clarke. 2021. "The Effect of a 10-Week Physical Activity Programme on Fundamental Movement Skills in 3 – 4-Year-Old Children within Early Childhood Education Centres."
- 2) Australian Government Department of Health. 2013. "Australia's Physical Activity and Sedentary Behaviour Guidelines for Young People (18-65 Years)." 8.
- 3) Blair, Alexandra, Arjumand Siddiqi, and John Frank. 2018. "Canadian Report Card on Health Equity across the Life-Course: Analysis of Time Trends and Cross-National Comparisons with the United Kingdom." *SSM - Population Health* 6(September):158–68. doi: 10.1016/j.ssmph.2018.09.009.
- 4) Bowe, Andrea K., Miriam Owens, Mary B. Codd, Brian A. Lawlor, and Ronan W. Glynn. 2019. "Physical Activity and Mental Health in an Irish Population." *Irish Journal of Medical Science* 188(2):625–31. doi: 10.1007/s11845-018-1863-5.
- 5) Busing, Kyle, and Carrie West. 2016. "Determining the Relationship Between Physical Fitness, Gender, and Life Satisfaction." *SAGE Open* 6(4). doi: 10.1177/2158244016669974.
- 6) Callow, Daniel D., Naomi A. Arnold-nedimala, Leslie S. Jordan, Gabriel S. Pena, Junyeon Won, John L. Woodard, D. Ph, J. Carson Smith, and D. Ph. 2020. "The Mental Health Benefits of Physical Activity in Older Adults Survive the COVID-19 Pandemic." 10(October):1046–57. doi: 10.1016/j.jagp.2020.06.024.
- 7) Hertwig, Ralph, Greg Barron, Elke U. Weber, and Ido Erev. 2004. "Is Reading about the Kettle the Same as Touching It? Decisions from Experience and the Effects of Rare Events in Risky Choice." *Psychological Science* 15(8):534–39.

The Impact of Physical Activity and Psychological Health of Indonesian Education University Students during Covid-19 Pandemic

- 8) Kilpatrick, Marcus, Edward Hebert, and John Bartholomew. 2005. "College Students' Motivation for Physical Activity: Differentiating Men's and Women's Motives for Sport Participation and Exercise." *Journal of American College Health* 54(2):87–94. doi: 10.3200/JACH.54.2.87-94.
- 9) Kim, Hyun Kyung, Mi Ja Kim, Chang Gi Park, and Hyeon Ok Kim. 2010. "Gender Differences in Physical Activity and Its Determinants in Rural Adults in Korea." 876–83. doi: 10.1111/j.1365-2702.2009.03054.x.
- 10) Locke, A. M. Y. B., Nell Kirst, Cameron G. Shultz, Michigan Medical, and Ann Arbor. 2015. "Diagnosis and Management of Generalized Anxiety Disorder and Panic Disorder in Adults."
- 11) Lukács, Andrea. 2021. "The Impact of Physical Activity on Psychological Well-Being and Perceived Health Status during Coronavirus Pandemic in University Students." *Journal of King Saud University - Science* 33(6). doi: 10.1016/j.jksus.2021.101531.
- 12) Lundgren-Nilsson, Åsa, Ingibjörg H. Jonsdottir, Gunnar Ahlborg, and Alan Tennant. 2013. "Construct Validity of the Psychological General Well Being Index (PGWBI) in a Sample of Patients Undergoing Treatment for Stress-Related Exhaustion: A Rasch Analysis." *Health and Quality of Life Outcomes* 11:1–9. doi: 10.1186/1477-7525-11-2.
- 13) Maugeri, Grazia, Paola Castrogiovanni, Giuseppe Battaglia, Roberto Pippi, Velia D'Agata, Antonio Palma, Michelino Di Rosa, and Giuseppe Musumeci. 2020. "The Impact of Physical Activity on Psychological Health during Covid-19 Pandemic in Italy." *Heliyon* 6(6):e04315. doi: 10.1016/j.heliyon.2020.e04315.
- 14) Romeo, J., J. Wärnberg, T. Pozo, and A. Marcos. 2010. "Physical Activity, Immunity and Infection." *Proceedings of the Nutrition Society* 69(3):390–99. doi: 10.1017/S0029665110001795.
- 15) Romero-Blanco, Cristina, Julián Rodríguez-Almagro, María Dolores Onieva-Zafra, María Laura Parra-Fernández, María Del Carmen Prado-Laguna, and Antonio Hernández-Martínez. 2020. "Physical Activity and Sedentary Lifestyle in University Students: Changes during Confinement Due to the Covid-19 Pandemic." *International Journal of Environmental Research and Public Health* 17(18):1–13. doi: 10.3390/ijerph17186567.
- 16) Stockwell, Stephanie, Mike Trott, Mark Tully, Jae Shin, Yvonne Barnett, Laurie Butler, Daragh McDermott, Felipe Schuch, and Lee Smith. 2021. "Changes in Physical Activity and Sedentary Behaviours from before to during the COVID-19 Pandemic Lockdown: A Systematic Review." *BMJ Open Sport and Exercise Medicine* 7(1):1–8. doi: 10.1136/bmjsem-2020-000960.
- 17) Taylor, Steven. 2019. *The Psychology Of Pandemic*.
- 18) Ulfa, Zuly Daima, Ujen Zenal Mikdar, and Universitas Palangka Raya. 2020. "Dampak Pandemi Covid-19 Terhadap Perilaku Belajar , Interaksi Sosial Dan Kesehatan Bagi Mahasiswa FKIP Universitas Palangka Raya." 5:124–38.
- 19) World Health Organization. 2021. "World Health Organization. Coronavirus Disease 2019 (COVID-19)." *Situation Report*, 32. 2020(September).



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Training, Innovative Behavior and Performance: Empirical Studies in Private School



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ABSTRACT: An immediate requirement exists for high quality human resources capable of providing a competitive edge to the organization. This quantitative descriptive study aims to examine the impact of training on teacher innovative behavior and performance. By practicing the stratified random sampling technique, 126 teachers from a private school in Jakarta, Indonesia became research respondents. Data collection using a questionnaire. Data was processed and analyzed using Structural Equation Modeling (SEM) with SmartPLS software. The results revealed that there was a positive effect of training on teacher innovative behavior and performance. Thus, training can be used as an effort to develop human resources in organizations, especially innovation and performance.

KEYWORDS: training, innovative behavior, performance, teachers, private schools

INTRODUCTION

The demands of society and industry for quality human resources and rapid social change make educational institutions always in the dynamics of growth. This is needed to meet the expectations of the younger generation who are competent in knowledge, skills and virtuous character. With the market and competition becoming more intense, innovation has emerged as a vital catalyst for the survival and growth of organizations (Zhang, 2020), so it is important for organizations to seek various ways to inspire innovative behavior of employees. An essential challenge in present organizational practices revolves around fostering employee innovative behavior while sustaining organizational vitality amidst fierce competition (Zhang, 2020).

Teacher as the spearhead and determinant of the success of the process of learning and education for the nation's children should receive primary attention. Algethami (2022) highlights that educational institutions aim to enhance the quality of service and professionalism among teachers to elevate educational, research, and career performance. This is achieved through the implementation of specialized training programs. These training initiatives provide teachers with innovative techniques to facilitate the learning process and address potential challenges effectively. In today's evolving society, the education system necessitates substantial reforms that prioritize pedagogical knowledge and practice. This emphasis extends to individuals with diverse interests and abilities, as well as moral values, fostering creativity, critical thinking, integrated problem-solving skills, analytical proficiency, and decision-making abilities regardless of their chosen field of study or career path (Sultanova et al., 2021).

Teachers are a key element of education to give birth to innovative and creative generations (Yilmaz, 2021). Roles and responsibilities are not only transferring knowledge but are increasingly expanding along with the changing educational needs of students and advances in technology. Teachers play multifaceted roles that encompass encouraging, supporting, and facilitating learning situations, allowing students to explore their talents and unlock their physical and intellectual potential to the fullest. Additionally, teachers guide students in developing the desired character traits and instilling social and human values, ultimately shaping them into responsible and engaged citizens (Dahiya, 2019).

Teachers are a sustainable organizational resource, being the main driver of change, especially in a rapidly developing environment (Kazmi & Javaid, 2022). Teacher competency determines the quality of learning and school characteristics, which in turn influences the skills and quality of the future workforce and even influences economic development and the competitive power of science and technology (Zhaohongliu et al., 2018). Educational institutions and teachers at every level are anticipated to be proficient in innovating both in learning theory and practice, along with all other facets of complex organizations. This innovation is pointed at equipping pupils with the necessary skills and knowledge to thrive in a high-quality life and work environment (Serdyukov, 2017).

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Currently, educational institutions, especially schools, are experiencing changes in culture and civilization after more than two years of learning being carried out from home due to the covid-19 pandemic. Many teachers complain that students' behavior has changed since returning to school, such as being less disciplined, more selfish, and difficult to manage. Even though teachers have difficulty dealing with changes in student behavior, because of the demands of their duties and responsibilities as educators, teachers never give up. Teachers need to find new creative and breakthrough ways to educate, serve, and assist students so they can grow and develop according to educational goals. In other words, teachers need to improve knowledge, skills, behavior and performance to improve service delivery (Mpofu & Hlatywayo, 2015) of quality education to students.

To meet challenges and expectations, teachers need intensive training in various aspects related to new innovations (Dahiya, 2019). Teacher training is undeniably one of the most crucial and essential elements for promoting, enhancing, and advancing education. A well-designed and effective teacher training system has the potential to produce high-quality teachers who are dedicated, pedagogically skilled, and deeply invested in the learning and development of their students (Siddiqui et al., 2021). To increase innovative service behavior and provide appropriate services, employees need a series of training and development (Luthuli et al., 2019). Qualified teacher training plays an important role in nation-building (Siddiqui et al., 2021). Ongoing professional training makes it possible to adapt educational trends, learning technologies, and scientific approaches to teaching (Velychko et al., 2022). Mpofu & Hlatywayo (2015) emphasized the significance of quality worker training, which can be achieved through well-designed programs and skilled facilitators. This focus on quality training contributes to enhanced employee performance and positively impacts service improvements within an organization.

During the school year 2022/2023, a prominent private school in Jakarta, Indonesia, conducted extensive training programs focusing on enhancing both hard and soft skills of their teachers. These training initiatives involved reputable experts from both local and international sources. The topics covered a wide range of areas, including technology integration in learning, problem-solving, literacy improvement, integrated learning approaches, leadership development, reinforcement of school core values, and customer service excellence.

The purpose of these comprehensive training sessions is to equip teachers with better preparedness to effectively teach, support, and serve their students, particularly concerning character development and behavioral aspects. The researchers hypothesize that the extent of training received by teachers will influence their work patterns and approaches to serving students, and this study aims to validate this assumption. By assessing the impact of these training programs on teachers' attitudes and practices, the school seeks to improve the overall educational experience and service quality for its students.

Training is an integral part of HR practices that significantly contributes to the development of any organization, including educational institutions such as schools. Previous researchers have extensively explored the significance of training in improving employee performance (Dabale et al., 2014; Razak, 2021), particularly within specific sectors like health (Shahbaz & Hadi, 2021), construction (Misra & Mohanty, 2021), and various other fields. Studies by Ocean et al. (2017) and Muleya et al. (2022) have highlighted the positive impact of training on increasing employee affective commitment. Additionally, Jalil et al. (2021) have focused on training's role in enhancing the innovative behavior of manpowers in small and medium enterprises.

This current research is valuable both theoretically and practically, as it is conducted in private educational institutions and aims to investigate the effects of training on innovative behavior and performance. By examining the influence of training on these specific outcomes, this study can provide valuable insights for enhancing the effectiveness of training initiatives in educational settings and contribute to the broader concept of training, performance and employee behavior.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Training

Training plays a vital role in employee development by enhancing their knowledge and skills, leading to improved and transformed performance (Sheeba & Christopher, 2020). It involves teaching specific skills and practical knowledge in the workplace, enabling employees to acquire competence in their roles (Sartori & Tacconi, 2017). Training serves as the foundation for increasing efficiency within an organization and serves as a source of inspiration and motivation for employees. By highlighting the significance of their work and providing essential data, training empowers employees to generate better output (Halawi et al., 2018). This emphasis on continuous learning and skill improvement is essential for nurturing a skilled and motivated workforce, leading to increased productivity and overall organizational success.

Training serves as a means to create awareness and impart essential information necessary for performing specific job roles effectively. It equips employees with the knowledge and expertise required to enhance their performance in their respective tasks (Sheeba & Christopher, 2020). By providing the appropriate skills and capabilities, training enables employees to demonstrate their competency and potential in the workplace. The effectiveness of training lies in its ability to bridge knowledge and skill gaps among employees. When training successfully addresses these gaps, it prepares the workforce with new and

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relevant skills, ensuring they remain well-equipped to tackle future challenges and evolving demands (Sheeba & Christopher, 2020). In this way, training serves as a powerful tool for personal and professional growth, not only benefiting the employees but also contributing to the overall success and adaptability of the organization.

Trained and knowledgeable employees are a valuable asset to any organization, as they enhance effectiveness and efficiency in task performance. Attaining organizational goals is expected through positive behavioral changes resulting from learning experiences during training (Misra & Mohanty, 2021). Using various training methods, organizations seek to promote positive behavioral changes in their employees (Neck et al., 2017). Effectiveness of training hinges on three elements: organizational support, employee enthusiasm, and satisfaction with the training attended (Demiral, 2017). Training and development are crucial for both organizational success and individual employee career growth (Luthuli et al., 2019) and significantly contribute to productivity (Demiral, 2017). In the context of teacher training, the focus should be on reflection and processes that foster projects promoting the effective use of pedagogical tools, resources, programs, services, and environments (Hepp et al., 2015).

Various types of training programs are effective in cultivating diverse competencies. Regardless of differences in methods, objectives, and aspects, training activities directly and indirectly impact workers and organizations (Demiral, 2017). To ensure the success of training and development programs, employees selected to participate must exhibit great enthusiasm for the program. This enthusiasm is instrumental in developing employee competencies, fostering affective commitment, and promoting innovative behavior in the workplace (Batmomolin et al., 2022). Well-planned training programs with obvious goals prove highly powerful in boosting both affective and calculative commitment among employees. Individuals who are devoted and committed are likely to be highly motivated to surpass the expectations outlined in their job description. This motivation drives them to make extra efforts and contribute significantly towards achieving the company's objectives (Jalil et al., 2021).

Innovative Behavior

Innovation can be described as the act of introducing a novel and valuable concept, which involves the adoption of fresh or modified approaches, methods, practices, products, and services (Dahiya, 2019). It is regarded as a crucial and positive catalyst for necessary changes (Serdyukov, 2017). Innovation represents the pathway to progress, and the future of a nation lies in its classrooms (Dahiya, 2019). The evaluation of innovation is based on its novelty, originality, and potential impact. Since inventions often require significant time and financial investment, it becomes essential to assess the costs and both short-term and long-term consequences associated with an innovation. In various ways, innovation can bring about transformative changes in educational services and other fields (Serdyukov, 2017).

Innovating involves breaking away from existing practices and generating fresh ideas that enable the execution of tasks in novel ways. The primary objective of any invention is to introduce something distinct from what has been previously accomplished, be it in terms of quality, quantity, or both. For innovation to have a significant transformative impact, it needs to be put into action through rapid diffusion and widespread implementation (Serdyukov, 2017). In this way, innovative ideas can lead to substantial positive changes and advancements across various domains, benefiting society as a whole.

The innovative behavior of employees plays a crucial role as a driving force for innovation within an organization, contributing to its success and overall business continuity in a competitive environment (Al-Omari et al., 2019; Muchiri et al., 2020). This behavior encompasses generating ideas, products, processes, or services that start from identifying problems and finding creative solutions (Al-Omari et al., 2019). The outcome of such behavior leads to improved organizational performance (Ranasinghe & Samarasinghe, 2019). To promote innovative behavior, managers must invest in employee growth by establishing personal relationships with employees to understand their capacities and abilities (Opoku et al., 2019). This understanding enables managers to encourage and foster innovation effectively. Innovation is increasingly recognized as a primary strategy for organizational survival in today's competitive economy (Al-Omari et al., 2019), and it is positively associated with organizational sustainability (Islam et al., 2018). Innovative behavior empowers employees to find creative solutions, update processes, and adopt innovative mindsets to enhance performance, excellence, and overall effectiveness (Javed et al., 2021).

Innovative behavior encompasses various actions, such as actively seeking new alternative solutions and introducing fresh ideas to captivate clients (Stock et al., 2017). This behavior serves a functional role by fulfilling dual purposes: first, it enhances the individual's image within the group, and second, it helps to maintain the individual's status within the group (Opoku et al., 2019).

Schools are inevitably impacted by rapid changes, making innovation a critical priority to ensure their continued existence (Hepp et al., 2015). Both schools and teachers can embrace innovation and experimentation across various aspects related to learning and school management. This approach aims to enhance institutional efficiency and address challenges encountered in daily educational practices (Dahiya, 2019). Innovation in education can be directed at progress in different dimensions, including

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theory and practice, curriculum, teaching and learning methods, policy, technology integration, institutional management, organizational culture, and teacher professionalism (Serdyukov, 2017). The process of innovation involves three key steps: generating ideas, implementing those ideas, and evaluating the results obtained from the changes brought about by these ideas. The goal of educational innovation is to enhance productivity, efficiency, and the overall quality of learning experiences (Serdyukov, 2017). By continually seeking new and creative approaches to education, schools can adapt to the evolving needs of learners and educators, ultimately fostering an environment of continuous improvement and development.

Performance

Employee performance refers to the effective and efficient implementation of duties and activities by employees. It enacts a critical part in contributing positively to the measurable performance of an organization (Saleem et al., 2019). Employee performance is a combination of employee behaviors and results achieved through the application of specific competencies while completing tasks (Imran & Tanveer, 2015).

For the survival of any organization, employee performance serves as a driving force, representing the level of work productivity in meeting the organization's standards (Imran & Tanveer, 2015). Several factors influence employee performance, including financial benefits, training programs, non-monetary incentives, supervision, organizational support, and capacity-building opportunities (Kazmi & Javaid, 2022).

Organizations dedicate considerable efforts to fulfill employees' needs and raise performance to assure workplace productivity and effectiveness (Kazmi & Javaid, 2022). The level of employee performance is positively influenced by their abilities, motivation, and a supportive work environment that encourages participation (Pahos & Galanaki, 2019). High-performing employees significantly contribute to an organization's efficiency and success, underscoring the importance of developing performance improvement strategies and regularly assessing performance (Imran & Tanveer, 2015).

Training and Innovative Behavior

Training and development programs are vital pillars in the context of personal and professional development, serving as essential structures and functions that enlighten employees in various scenarios, improving their skills, performance, efficiency, and overall excellence. These programs offer valuable learning experiences, equipping workers with the obligatory knowledge and competencies to outpace in their jobs. The benefits extend not only to individuals but also to the organization, as trained and developed employees become more productive, leading to overall success. Investing in employee growth fosters a positive work environment and enhances engagement and retention. Emphasizing such initiatives demonstrates a commitment to continuous learning and improvement, nurturing a culture of development within the organization (Misra & Mohanty, 2021). Participation in training has a positive influence on cultivating innovative work behavior among employees (Anjum et al., 2016; Batmomolin et al., 2022). Employees who actively engage in training activities are more inclined to demonstrate innovative behavior (Susomrith et al., 2019).

As highlighted by Shahbaz & Hadi (2021), training and development programs serve as valuable opportunities for employee learning, especially when employees feel a strong psychological commitment to the organization. By involving employees in these programs, organizations demonstrate their appreciation and prioritization of their workforce, leading to a reciprocal response and fostering a higher level of affective commitment to the organization (Grund & Titz, 2021). Encouraging employee participation in training programs is pivotal for promoting the elevation of innovative behaviors, ultimately contributing to the achievement of optimal organizational performance (Jalil et al., 2021).

H1 Training has a positive effect on innovative behaviour

Training and Performance

Training is an important role in maximizing employee performance, enhancing their efficiency, productivity, job satisfaction, motivation, and innovation in the workplace. By identifying appropriate learning opportunities for employees, organizations can acquire a competitive position in the global market (Rodriguez & Walters, 2017). Training equips employees with essential skills required to perform various tasks, such as critical thinking, leadership, teamwork, and building positive relationships beneficial for the organization (Halawi et al., 2018).

Improving skills through training and developing high-quality employees leads to increased employee performance, as supported by research conducted by Mpofu & Hlatywayo (2015) and Abugre & Nasere (2020). Otoo et al. (2019) emphasize that training positively influences both employee and organizational performance by enhancing knowledge, skills, abilities, competencies, and behavior.

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Additionally, training and development programs contribute to improved productivity and customer service. Workers who participate in various training programs experience enhanced performance, leading to increased productivity (Imran & Tanveer, 2015). This, in turn, positively affects customer service and overall organizational success.

H2 Training has a positive effect on performance

Innovative Behavior and Performance

Innovative behavior displayed by employees leads to improved individual performance through more efficient and effective methods. This behavior also provides organizations with a competitive advantage (Nasir et al., 2018). The presence of innovative behavior can positively influence individual mindsets, consequently enhancing overall organizational performance (Chan & Rasli, 2014).

Studies, such as the one by Al Wali et al. (2022), highlight the importance of employee innovative behavior in improving overall performance. Workers who exhibit a upper rank of innovation also tend to have better job performance. Innovative employees actively seek new ideas to address pressing problems and continuously seek new information to enhance their job performance (Vuong et al., 2022).

Awan & Javed (2015) and Sofiyan et al. (2022) suggest that increased performance can be achieved by fostering innovation in various forms, including product, process, marketing, and organizational innovations, all of which impact employee performance. Teachers who possess an inventive growth mindset believe that their skills can be improved by commitment, hard work, and feedback from others (Sofiyan et al., 2022). Empirical evidence from studies by Chan & Rasli (2014) and Nasir et al. (2018) further supports the significant impact of innovative behavior on overall performance.

H3 Innovative behavior has a positive effect on performance

The Effect of Training on Performance is mediated by Innovative Behavior

Innovative behavior can be successful if the ideas initiated are actually implemented. To implement an idea, the support of other people and organizations is needed (Al-Ghazali & Afsar, 2021). According to Vuong et al. (2022), employees who feel supported by superiors and colleagues including the organization, can implement new ideas to improve performance. Training is a form of organizational support for employee self-development. Workers are encouraged to be creative and innovative, and their participation in training activities plays a vital role in developing and honing their skills (Jalil et al., 2021). So, innovative behavior tends to be a mediator in the effect of training on performance.

H4 Innovative behavior mediates the effect of training on performance

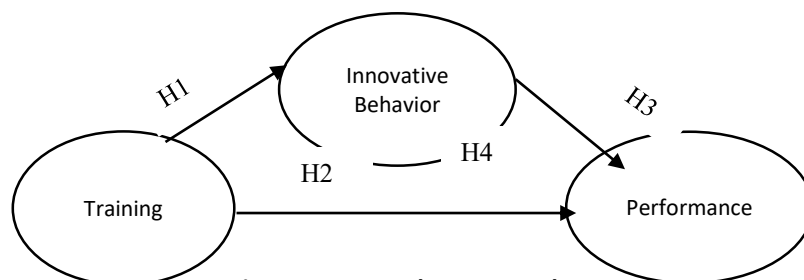


Figure 1. Research Framework

METHOD

This quantitative descriptive study was conducted to find out the effect of training on teacher innovative behavior and performance. The population in the study was 144 persons of Kindergarten Playgroup, Elementary School, Junior High School, Senior High School and Vocational High School teachers from a private educational foundation in Jakarta. By using stratified random sampling, 126 teachers participated as respondents. This number is in accordance with the criteria proposed by Hair et al. (2014) that the number of samples should be 5-10 times the questionnaire items. Research questions were inputted into a Google form which was distributed online to the chairman of the foundation to then be given to school principals to be distributed to teachers in each school to fill them out. The data collected was subjected to analysis using Structural Equation Modeling (SEM) through the utilization of SmartPLS software.

To measure training, a questionnaire constructed by (Demiral, 2017) was used consisting of three dimensions, namely institutional support for training 4 items, enthusiasm for training 4 items and employee satisfaction with training 4 items. Innovative behavior measurement uses a 6 items questionnaire adopted from the study (Hu et al., 2009). To measure employee performance, 6 items developed by (Koopmans et al., 2012) were used. The results of the validity and reliability tests indicated that the values of all questionnaires were feasible to use as research instruments.

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RESULTS

Descriptive statistics

Respondents were mostly women 71.4%, 37.3% aged 46-55 years, 90.5% had undergraduate education, 34.1% worked for less than 5 years, 73.8% as permanent employees of foundations, and 62.7% had educator certificates.

The average value of the training variable is 4.30. This indicates that teacher training and development is paid close attention to both foundations and schools, the training is well planned, there are opportunities for teachers to attend training so they can adapt to change, and teachers are interested in personal and professional development. Teachers see training as an effort to develop themselves, teachers are proactive in looking for ways to improve their quality, teachers are looking for opportunities to learn and design learning objectives for themselves to improve the quality of their learning and services. Teachers are satisfied with the number and methods of training attended, the training is according to needs, and the results of the training can be used to develop their professional skills as educators.

The teacher's innovative behavior average is 4.14. It means that the teacher considers himself as a creative team member, the teacher has innovative and creative ideas, the teacher has planned and tried to propose creative ideas and convince his colleagues, the teacher has been looking for new techniques, methods or ways of service, available resources and sufficient funds to implement innovation.

The average performance is 4.07, meaning that the teacher can complete all the assignments given, fulfill all the requirements set, be actively involved in all activities that affect his performance, have creative ideas, be able to do the job quickly and precisely and achieve the targets set.

Validity and Reliability Testing

The value of factor loading, Cronbach's Alpha, composite reliability and AVE from training, innovative behavior and performance variables is above 0.6. This indicates that the research instrument is valid and reliable to use based on suggestions from Hair et al. (2014).

Table 1. Validity and Reliability

Variable	Indicator	Loading Factor	AVE	Cronbach's Alpha	Composite Reliability	Result
Training	OST1	0.864	0.607	0.941	0.949	Valid & Reliable
	OST2	0.888				
	OST3	0.853				
	OST4	0.877				
	EET1	0.847				
	EET2	0.913				
	EET3	0.844				
	EET4	0.806				
	EST1	0.868				
	EST2	0.865				
	EST3	0.869				
	EST4	0.825				
Innovative Behavior	ISB1	0.819	0.635	0.884	0.912	Valid & Reliable
	ISB2	0.832				
	ISB3	0.787				
	ISB4	0.829				
	ISB5	0.744				
	ISB6	0.765				
Performance	PF1	0.731	0.618	0.876	0.906	Valid & Reliable
	PF2	0.817				
	PF3	0.792				
	PF4	0.790				
	PF5	0.799				
	PF6	0.785				

Source: processed data

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Discriminant Correlation Testing

To determine the validity of a construct, researchers calculate the square root of the average Variance Extracted (AVE) value for each construct. When the square root of the mean AVE value for a construct is higher than the correlation value with other constructs in the model, it provides evidence of discriminant validity, confirming that the construct is distinct and valid in the research context.

Table 2. Discriminant correlation test results

	Training	Performance	Innovative behavior
Training	0.779	0.786	0.795
Performance		0.670	0.550
Innovative behavior			0.797

Source: processed data

Structural Model Testing

The structural model testing involved examining the relationships between different constructs, assessing the significance value, and calculating the R-square values. The R-square values are useful for understanding the impact of training variables on both innovative behavior and performance variables. For the performance variable, the R-square value is 0.450, indicating that 45% of the variance in performance can be attributed to the combined influence of the foundation/school support variable, teacher enthusiasm in training, and teacher satisfaction in training. The remaining 55% of the variance in performance is influenced by other variables not included in this study. In contrast, the R-square value for the innovative behavior variable is 0.63, indicating that 63% of the variance in innovative behavior is influenced by the training variable. From these findings, it can be concluded that the effect of training on teacher innovative behavior is stronger (63%) when compared to the effect of training on improving teacher performance (45%).

Hypothesis testing

Hypothesis testing using the Bootstrapping function on SmartPLS 3.0. According to Hair et al. (2014), a hypothesis is accepted when the significance level is less than 0.05 ($p < 0.05$) or when the t-value exceeds the critical value. Based on the results presented in Table 3, two of these hypotheses were supported (accepted) because their significance levels were less than 0.05 or their t-values exceeded the critical value. On the other hand, two hypotheses were not supported (rejected) because their significance levels were greater than 0.05 or their t-values did not surpass the critical value.

Table 3. Hypothesis Testing Results

	Original Sample	Sample Mean	Standard Deviation	Statistics	P Values	Decision
Training -> Performance	0.633	0.631	0.102	6.207	0.000	H1 Supported
Training -> Innovative behavior	0.795	0.800	0.039	20,395	0.000	H2 Supported
Innovative behavior -> Performance	0.046	0.054	0.116	0,399	0.690	H3 Not supported
Innovative Behavior mediates Training -> Performance	0.037	0.044	0.094	0.392	0,696	H4 Not supported

Source: Data processed with SmartPLS

The P-value coefficient for the effect of training on performance is 0.00 < 0.05 . Thus H1 is supported. The P-value for the influence of Training on Innovative Behavior is 0.00 < 0.05 . Then H2 is supported. The P-value coefficient for the effect of innovative behavior on performance is 0.690 > 0.05 , which means that H3 is not supported. Likewise, the p-value coefficient for the effect of training on performance mediated by innovative behavior is 0.696 > 0.05 so H4 is not supported.

DISCUSSION

The empirical test results indicate that training has a positive effect on innovative behavior. Thus, teachers who have participated in various trainings can make them more creative and innovative both in preparing various learning methods and services for

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students. Indeed, in the field of education, innovation can manifest as various forms, including new pedagogic theories, methodological approaches, teaching techniques, learning equipments, learning processes, or institutional structures. When these innovative ideas and practices are implemented in the educational process, they lead to substantial changes that ultimately result in better student learning outcomes (Serdyukov, 2017). This confirms the findings of Anjum et al. (2016), Jalil et al. (2021), and Susomrith et al. (2019), which indicate that training plays a significant role in influencing employee innovative behavior.

This finding asserts the importance of giving chances for workers to learn and grow their skills. By equipping employees with new knowledge and abilities through training, organizations can foster a more innovative and creative workforce. This, in turn, can lead to the adoption of novel approaches and practices, ultimately benefiting the organization's performance and competitiveness. Therefore, investing in training and encouraging a culture of innovation can be pivotal in driving positive changes and achieving success in various fields, including education and the broader workforce.

The findings affirm that training has a positive effect on teacher performance. The substantial number of training initiatives implemented by foundations and private schools in this research significantly contributed to improving teacher performance. The support provided by foundations and schools for training, along with teacher enthusiasm and satisfaction with the training they attended, had a positive impact on scholar learning and enhanced service delivery. These results are consistent with previous researcher (Guan & Frenkel, 2019; Abugre & Nasere, 2020; Saudi et al., 2021; Mahmood et al., 2021). The collective evidence from these studies reaffirms the importance of training as a valuable tool for enhancing employee performance across various contexts and industries.

In the educational setting, providing teachers with ample training opportunities can lead to improvements in their teaching skills, classroom management techniques, and pedagogical knowledge, ultimately resulting in better student outcomes. Moreover, when organizations invest in the professional development of their employees, including teachers, it demonstrates a commitment to their growth and advancement, fostering a more motivated and engaged workforce.

The finding that innovative behavior has no direct effect on performance may indeed be surprising and contradictory to previous research conducted by Chan & Rasli (2014) and Nasir et al. (2018), which suggested a positive impact of innovative behavior on performance. One potential explanation for this inconsistency could be attributed to the distinctive characteristics of the sample used in the present study. The fact that 34.1% of the teachers had worked at the school for less than five years may play a role in the observed results. According to Liu et al. (2016), an employee's tenure in an organization can have an interactive influence on their innovative behavior. Employees with shorter tenure and higher status hierarchies may be negatively related to innovative behavior. On the other hand, Chan & Rasli (2014) found that longer tenure leads to higher employee innovative work behavior.

In the current study, the shorter tenure of a significant portion of teachers could be a contributing factor to the lack of a direct effect of innovative behavior on performance. It is possible that innovative behavior takes time to manifest its impact on performance, and longer tenure may be required for teachers to fully integrate their innovative ideas and behaviors into their work practices, leading to improved performance.

CONCLUSIONS

There is a positive effect of training on both innovative behavior and performance. Between the two dependent variables, the effect of training on innovative behavior is stronger than the effect of training on performance. Thus, educational foundations, schools and other organizations need to invest in training because during training, employees are equipped with various knowledge and skills needed to grow and develop employee innovative behavior. Training can be a means to improve employee performance.

The results of this study can theoretically contribute to the enrichment of the literature on training, innovation and performance especially in formal educational institutions. In addition, it also has practical implications for foundations, schools, organizations and leaders that training in the framework of developing innovative behavior and improving performance can be planned based on a clear and precise analysis of needs, then the implementation of training using interesting methods and expert sources can enable teachers and other employees to improve their abilities to carry out the tasks and responsibilities given to them.

Limitations and Future Research

This research has limitations, namely it was only carried out in a private school, further research can be carried out using a larger sample involving private schools and public schools. Future research can also be conducted in other organizations by adding the variables of job satisfaction and leadership as the dependent and or mediating variables.

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The results highlight as well the importance of considering contextual factors, such as tenure and organizational hierarchies, when exploring the influence of innovative behavior on performance. It also emphasizes the need for further research to better understand the complexities and nuances of this effect in different settings and with diverse samples.

REFERENCES

- 1) Abugre, J. B., & Nasere, D. (2020). Do high-performance work systems mediate the relationship between HR practices and employee performance in multinational corporations (MNCs) in developing economies? *African Journal of Economic and Management Studies*, 11(4), 541–557. <https://doi.org/10.1108/AJEMS-01-2019-0028>
- 2) Al Wali, J., Muthuveloo, R., & Teoh, A. P. (2022). Unravelling the nexus between creative self-efficacy, humble leadership, innovative work behaviour and job performance amongst physicians in public hospitals. *Asia-Pacific Journal of Business Administration*. <https://doi.org/10.1108/APJBA-05-2021-0205>
- 3) Algethami, R. K. (2022). Assessing the quality of training programs for teachers of students with disabilities in light of recent trends in the Kingdom of Saudi Arabia. *PLoS ONE*, 17(7 July). <https://doi.org/10.1371/journal.pone.0270538>
- 4) Al-Ghazali, B. M., & Afsar, B. (2021). Investigating the mechanism linking task conflict with employees' innovative work behavior. *International Journal of Conflict Management*, 32(4), 599–625. <https://doi.org/10.1108/IJCM-07-2020-0119>
- 5) Al-Omari, M. A., Choo, L. S., & Ali, M. A. M. (2019). Innovative work behavior: A review of literature. *International Journal of Psychosocial Rehabilitation*, 23(2), 39–47. <https://doi.org/10.37200/IJPR/V23I2/PR190268>
- 6) Anjum, A., Sabir, Hazoor. M., Makhdoom, H. ur R., & Hussain, M. S. (2016). Effort-Enhancing HR Practices and Innovative Work Behavior: Role of Employee Empowerment. *International Journal of Academic Research in Business and Social Sciences*, 6(10), 356–368. <https://doi.org/10.6007/ijarbss/v6-i10/2362>
- 7) Awan, A. G., & Javed, A. (2015). Impact of Innovation on the Performance of Employees. *Industrial Engineering Letters*, 5(12). www.iiste.org
- 8) Batmomolin, A., Supriatna, D., Hananto, T., Tanuwijaya, J., & Sadana. Stefanus MS. (2022). Mediating Role of Intrapreneurship Competency and Affective Commitment in the Influence of Training and Development on Employees' Innovative Behavior. *Quality - Access to Success*, 23(191). <https://doi.org/10.47750/qas/23.191.09>
- 9) Dabale, W. P., Jagero, N., & Nyauchi, M. (2014). The Relationship between Training and Employee Performance: The Case of Mutare City Council, Zimbabwe. *International Journal of Human Resource Studies*, 4(4), 61. <https://doi.org/10.5296/ijhrs.v4i4.6620>
- 10) Dahiya, S. (2019). Innovative practices in teacher education. *International Journal of Basic and Applied Research*, 9(5). www.pragatipublication.com
- 11) Demiral, Ö. (2017). Effects of training on Employee Job Satisfaction and Achievement; 'Train to Gain' Evidence from Manufacturing Businesses in Turkey. *Business & Management Studies: An International Journal*, 5(3), 765–785.
- 12) Grund, C., & Titz, K. (2021). Affective commitment through further training: the roles of firm provision and employee participation. *Review of Managerial Science*, 1–32. <https://doi.org/10.1007/s11846-021-00460-1>
- 13) Guan, X., & Frenkel, S. (2019). How perceptions of training impact employee performance: Evidence from two Chinese manufacturing firms. *Personnel Review*, 48(1), 163–183. <https://doi.org/10.1108/PR-05-2017-0141>
- 14) Hair, J. F. Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate Data Analysis* (Seventh Ed). Pearson Education Limited.
- 15) Halawi, A. H., Halawi, A., & Haydar, N. (2018). Effects of Training on Employee Performance: A Case Study of Bonjus and Khatib & Alami Companies. *International Humanities Studies*, 5(2). www.ihs-humanities.com
- 16) Hepp K., P., Fernández, M. À. P., & García, J. H. (2015). Teacher training: Technology helping to develop an innovative and reflective professional profile. *RUSC Universities and Knowledge Society Journal*, 12(2), 30–43. <https://doi.org/10.7238/rusc.v12i2.2458>
- 17) Hu, M. M. L., Horng, J. S., & Christine Sun, Y. H. (2009). Hospitality teams: Knowledge sharing and service innovation performance. *Tourism Management*, 30(1), 41–50. <https://doi.org/10.1016/j.tourman.2008.04.009>
- 18) Imran, M., & Tanveer, A. (2015). Impact of Training & Development on Employees' Performance in Banks of Pakistan. *European Journal of Training and Development Studies*, 3(1), 22–44. www.eajournals.org
- 19) Islam, M., Hossain, A. T., & Mia, L. (2018). Role of strategic alliance and innovation on organizational sustainability. *Benchmarking*, 25(5), 1581–1596. <https://doi.org/10.1108/BIJ-12-2016-0188>
- 20) Jalil, M. F., Ullah, W., & Ahmed, Z. (2021a). Training Perception and Innovative Behavior of SME Employees: Examining the Mediating Effects of Firm Commitment. *SAGE Open*, 11(4), 1–17. <https://doi.org/10.1177/21582440211067250>

Training, Innovative Behavior and Performance: Empirical Studies in Private School

- 21) Jalil, M. F., Ullah, W., & Ahmed, Z. (2021b). Training Perception and Innovative Behavior of SME Employees: Examining the Mediating Effects of Firm Commitment. *SAGE Open*, 11(4), 1–17. <https://doi.org/10.1177/21582440211067250>
- 22) Javed, T., Mahmood, S., Khan, S., & Ullah, H. (2021). The Mediating Role of Affective Commitment between Creative Self-Efficacy, Authentic Leadership and Innovative Behaviour among Academic Employees of Higher Education Sector of Punjab, Pakistan. *IRASD Journal of Management Volume*, 3(3), 429–447.
- 23) Kamran Akhtar Siddiqui, Shahid Hussain Mughal, Imran Ali Soomro, & Masood Ahmed Dool. (2021). Teacher Training in Pakistan: Overview of Challenges and their Suggested Solutions. *IJORER: International Journal of Recent Educational Research*, 2(2), 215–223. <https://doi.org/10.46245/ijorer.v2i2.91>
- 24) Kazmi, S. W., & Javaid, S. T. (2022). Antecedents of organizational identification: implications for employee performance. *RAUSP Management Journal*, 57(2), 111–130. <https://doi.org/10.1108/RAUSP-02-2020-0017>
- 25) Koopmans, L., Bernaards, C., Hildebrandt, V., van Buuren, S., van der Beek, A. J., & de Vet, H. C. w. (2012). Development of an individual work performance questionnaire. *International Journal of Productivity and Performance Management*, 62(1), 6–28. <https://doi.org/10.1108/17410401311285273>
- 26) Leong, C. T., & Rasli, A. (2014). The Relationship between Innovative Work Behavior on Work Role Performance: An Empirical Study. *Procedia - Social and Behavioral Sciences*, 129, 592–600. <https://doi.org/10.1016/j.sbspro.2014.03.717>
- 27) Liu, Z., Ge, L., & Peng, W. (2016). How organizational tenure affects innovative behavior?: The role of culture difference and status determinants. *Nankai Business Review International*, 7(1), 99–126. <https://doi.org/10.1108/NBRI-01-2016-0001>
- 28) Luthuli, S., C. Nyawo, J., & Mashau, P. (2019). Effectiveness of Training and Development on Employees' Performance in South African Municipalities with Special Reference to Umzumbe Local Municipality. *AFFRIKA Journal of Politics, Economics and Society*, S1(1), 117–129. <https://doi.org/10.31920/2075-6534/2019/s1n1a7>
- 29) Misra, P. K., & Mohanty, J. (2021). A review on training and leadership development: its effectiveness for enhancing employee performance in Indian construction industry. *IOP Conference Series: Materials Science and Engineering*, 1045, 1–10. <https://doi.org/10.1088/1757-899x/1045/1/012020>
- 30) Mpofo, M., & Hlatywayo, C. K. (2015). Training and development as a tool for improving basic service delivery; the case of a selected municipality. *Journal of Economics, Finance and Administrative Science*, 20(39), 133–136. <https://doi.org/10.1016/j.jefas.2015.10.004>
- 31) Muchiri, M. K., McMurray, A. J., Nkhoma, M., & Pham, H. C. (2020). Mapping Antecedents of Innovative Work Behavior: A Conceptual Review. *The Journal of Developing Areas*, 54(4), 33–40.
- 32) Muleya, D., Ngirande, H., & Terera, S. R. (2022). The influence of training and career development opportunities on affective commitment: A South African higher education perspective. *SA Journal of Human Resource Management*, 1–8. <https://doi.org/10.4102/sajhrm>
- 33) Nasir, Halimatussakdiah, Suryani, I., Zuhra, S. E., Armia, S., & Mahdani. (2018). How Intrinsic Motivation and Innovative Work Behavior Affect Job Performance. *Advances in Social Science, Education and Humanities Research*. <https://doi.org/10.2991/agc-18.2019.91>
- 34) Neck, C. P., Houghton, J. D., & Emma L. (2017). *Organizational Behavior A Critical-Thinking Approach*.
- 35) Ocen, E., Francis, K., & Angundaru, G. (2017). The role of training in building employee commitment: the mediating effect of job satisfaction. *European Journal of Training and Development*, 41(9), 742–757. <https://doi.org/10.1108/EJTD-11-2016-0084>
- 36) Opoku, M. A., Choi, S. B., & Kang, S. W. (2019). Servant leadership and innovative behaviour: An empirical analysis of Ghana's manufacturing sector. *Sustainability (Switzerland)*, 11(22), 2–18. <https://doi.org/10.3390/su11226273>
- 37) Otoo, F. N. K., Otoo, E. A., Abledu, G. K., & Bhardwaj, A. (2019). Impact of human resource development (HRD) practices on pharmaceutical industry's performance: The mediating role of employee performance. *European Journal of Training and Development*, 43(1–2), 188–210. <https://doi.org/10.1108/EJTD-09-2018-0096>
- 38) Pahos, N., & Galanaki, E. (2019). Staffing practices and employee performance: the role of age. *Evidence-Based HRM*, 7(1), 93–112. <https://doi.org/10.1108/EBHRM-01-2018-0007>
- 39) Razak, N. (2021). The Effect of Training, Competence and Work Motivation on Employee Performance. *Jurnal Economic Resources*, 4, 1. <https://doi.org/10.33096/jer.v4i1.846>
- 40) Rodriguez, J., & Walters, K. (2017). The Importance of Training and Development in Employee Performance and Evaluation. *World Wide Journal of Multidisciplinary Research and Development*, 3(10), 206–212. <https://www.researchgate.net/publication/332537797>

Training, Innovative Behavior and Performance: Empirical Studies in Private School

- 41) Saleem, M. A., Bhutta, Z. M., Nauman, M., & Zahra, S. (2019). Enhancing performance and commitment through leadership and empowerment: An emerging economy perspective. *International Journal of Bank Marketing*, 37(1), 303–322. <https://doi.org/10.1108/IJBM-02-2018-0037>
- 42) Sartori, R., & Tacconi, G. (2017). Guest editorial. *European Journal of Training and Development*, 41(1), 2–7. <https://doi.org/10.1108/EJTD-07-2016-0050>
- 43) Saudi, M. H., Baker, R., Surayya, N., Saudi, M., & Mohamed, R. (2021). The Relationship between Motivation, Training, and Job Suitability with Employee Performance: A Study of Employees in the Private Sector. *Turkish Journal of Computer and Mathematics Education*, 12(11), 1156–1163.
- 44) Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning*, 10(1), 4–33. <https://doi.org/10.1108/jrit-10-2016-0007>
- 45) Shahbaz, A., & Hadi, N. U. (2021). Impact of Training and Development Programs on Employee Performance through Individual Learning: Moderating Role of Affective Commitment. *City University Research Journal*, 11(2), 233–252.
- 46) Sheeba, M. J., & Christopher, P. B. (2020). Exploring the role of training and development in creating innovative work behaviors and accomplishing non-routine cognitive jobs for organizational effectiveness. *Journal of Critical Reviews*, 7(4), 263–267. <https://doi.org/10.31838/jcr.07.04.49>
- 47) Sofiyan, Sembiring, R., Danilwan, Y., Anggriani, R., & Sudirman, A. (2022). Innovative Work Behavior and Its Impact on Teacher Performance: The Role of Organizational Culture and Self Efficacy as Predictors. *Journal of Education Research and Evaluation*, 6(1), 44–52. <https://doi.org/10.23887/jere.v6i1.38255>
- 48) Stock, R. M., Jong, A. de, & Zacharias, N. A. (2017). Frontline Employees' Innovative Service Behavior as Key to Customer Loyalty: Insights into FLEs' Resource Gain Spiral. *Journal of Product Innovation Management*, 34(2), 223–245. <https://doi.org/10.1111/jpim.12338>
- 49) Sultanova, L., Hordiienko, V., Romanova, G., & Tsytsiura, K. (2021). Development of soft skills of teachers of Physics and Mathematics. *Journal of Physics: Conference Series*, 1840(1). <https://doi.org/10.1088/1742-6596/1840/1/012038>
- 50) Susomrith, P., Coetzer, A., & Ampofo, E. (2019). Training and development in small professional services firms. *European Journal of Training and Development*, 43(5–6), 497–515. <https://doi.org/10.1108/EJTD-11-2018-0113>
- 51) Velychko, V. E., Kaydan, N. v., Fedorenko, O. G., & Kaydan, V. P. (2022). Training of practicing teachers for the application of STEM education. *Journal of Physics: Conference Series*, 2288(1). <https://doi.org/10.1088/1742-6596/2288/1/012033>
- 52) Vuong, B. N., Tushar, H., & Hossain, S. F. A. (2022). The effect of social support on job performance through organizational commitment and innovative work behavior: does innovative climate matter? *Asia-Pacific Journal of Business Administration*. <https://doi.org/10.1108/APJBA-06-2021-0256>
- 53) Yilmaz, F. G. (2021). Innovative Practices in Turkish Education System According to Teacher Perceptions. *Anatolian Journal of Education*, 6(1), 175–190. <https://doi.org/10.29333/aje.2021.6115a>
- 54) Zhang, X. (2020). The Relationship of Coaching Leadership and Innovation Behavior: Dual Mediation Model for Individuals and Teams across Levels. *Open Journal of Leadership*, 09(01), 70–83. <https://doi.org/10.4236/ojl.2020.91005>
- 55) Zhaohongliu, Yang, & Shipingliu. (2018). Innovative Practices in Modes of College Teacher Training. *Advances in Economics, Business and Management Research*, 55.



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Formation of a Positive Image Through FIFA Policy in Qatar 2022 on Online News Media (Model Teun A Van Dijk)



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ABSTRACT: This study aims to describe the text dimensions of Teun A Van Dijk's model in several online news texts such as (CNBC Indonesia) 5 Aturan Nonton Piala Dunia Qatar dari Alkohol sampai Busana, then online news from (14Kompasiana) Controversy and Positive Impacts of the 2022 World Cup in Qatar, and latest online news from (Hidayatullah.com) World Cup 2022: *Islamophobia* and Solidarity in Qatar. This research exists to describe Van Dijk's model in three dimensions of discourse: discourse text, social understanding, and social context. The results of research on online news discourse texts on the world cup case in Qatar are as a form of understanding social tolerance in eliminating irrationality to show the condition of unity that wants to be conveyed through the World Cup bond in Qatar between western and middle eastern countries that can occur and some participation and cup policies world in Qatar is also a special effort of the government to introduce the country's development to the eyes of the world.

KEYWORDS: Formation of a Positive Image Through FIFA Policy in Qatar 2022, Online News Media, Model Teun A Van Dijk, Discourse Text, Social Understanding, and Social Context

INTRODUCTION

Media newspapers usually use nonverbal language in their presentation. The written variant requires accuracy in its use because the information conveyed in the written variant is not as complete as the spoken variant. Therefore, the information conveyed by newspapers is sometimes still temporary before there is certainty from experts. Of course this is also influenced by the author's ability to lead a discourse that will be published in the media. Millennial society is the most effective means of conveying information to the public in the form of conversations, both individuals, groups and government agencies.

Analysis of the study of the most commonly used methods of the Teun A Van Dijk model. Van Dijk's conversation is described in three dimensions of development: discourse text, social understanding and social context. The essence of Teun A Van Dijk's analysis is to combine the three dimensions of discourse into a unified analysis. In relation to the dimensions of the meaning of the text, we examine how the structure of the text and discourse strategies are used to emphasize the discussion of a theme being discussed.

At the level of social understanding, the process of news text production is reviewed, namely the understanding of individual journalists. While the third aspect is examining the construction of discussions that develop about problems that exist in society. This study focuses on the discussion of discourse. Teun A Van Dijk sees that the text consists of several levels of structure that support each other. Divide it into three levels. The first level is the general meaning of the text, which can be observed by looking at the themes or topics raised in the news. The two levels of discourse superstructure are related to the framework of the text, how the parts of the text are arranged in the news as a whole. The third level of discourse meaning can be observed from small parts of the text, namely words, sentences, clauses, phrases, paraphrases, and images in the news.

The end of 2022 is the year when football has become a sporting event that people have been waiting for. The presence of Covid19 has been 2 years long and it has stopped all forms of activity in the world. This year's World Cup standings are the event that will be held from 20 November to 18 December 2022 as the results of the FIFA World Cup Qatar grub drawing have been announced. There are 32 participating countries for the 2022 World Cup that have qualified. There are 10 national teams that have qualified for 16 major countries at the 2022 World Cup this year, such as: France, Brazil, Portugal, Netherlands, Senegal, England, United States, Australia, Argentina, Poland, Morocco, Croatia, Japan, Spain, South Korea and Switzerland (this list was last updated at 04.34 WIB, Saturday 3 December 2022).

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Five Regulatory Policies for the Qatar 2022 World Cup Football Party in Online News Media

Post online news on their website links page. Their editorial team released a news statement on **CNBC Indonesia**, 21 November 2022, 10:25, Jakarta.

1. Alcohol

Just two days before the opening of the World Cup on Sunday (20/11/2022) the International Football Federation (FIFA) announced a ban on the sale of alcoholic beverages to fans watching the World Cup. The announcement was made by FIFA after discussing with Qatar as the host which has strict rules regarding alcohol. However, the policy was finally revised after lengthy negotiations between FIFA President Gianni Infantino would still be allowed to sell alcoholic beer in downtown Doha. Sales can also be done at designated entertainment venues.

2. Narcotics

Qatar is one of the strictest countries in the world when it comes to drug regulations. They banned cannabis and even drugs of all types of narcotics that are sold freely. The sale, trafficking and possession of illegal drugs can result in severe penalties, including long term imprisonment followed by deportation, heavy fines and up to drug smuggling which can carry the death penalty. World Cup fans should be aware of this law when arriving at Hamad International Airport, where authorities will be scanning bags and passengers with new security technology and have already caught those carrying the tiniest amount of drugs.

3. Sex

Qatar considers it a crime for single women and men to live together. The country even has an indecency law to punish sex offenders outside of marriage. However, authorities say unmarried couples can share a hotel room during the World Cup without any problems. Holding hands won't land you in jail, but visitors should avoid public displays of intimacy. Qatari law calls for prison terms of one to three years for adults convicted of consensual gay or lesbian sex. Crossdressing alias wearing clothes that do not match gender is also criminalized.

4. Dress Rules

The Qatari government's tourism website requires men and women to show respect for local culture by avoiding clothing that is too revealing in public. Visitors are asked to cover their shoulders and knees. Those wearing shorts and sleeveless tops are prohibited from approaching government buildings and malls. Women visiting the mosques in the city will be given a scarf to cover their heads. Another story at the hotel, where bikinis can be worn in the hotel swimming pool.

5. Other Violations

Putting up the middle finger, especially when dealing with the police or other authorities, someone can be arrested. Most of the criminal cases in Qatar punish foreigners who are not aware of such offences. Celebrating football matches that do not comply with the dress code will also be processed by security in Qatar. Filming and photographing people without their consent, as well as taking pictures of sensitive military or religious sites, can result in lawsuits. It is also important to be careful when discussing religion and politics with local residents. Spreading fake news and harming the country's interests is a serious crime.

Controversy and Positive Impacts of the 2022 World Cup in Qatar

Their online news editorial team released it on their website page at **14Kompasiana.com**, 22 November 2022, 17:03, Jakarta. In this media, Qatar proposed to host the 2022 World Cup to form a positive image in the eyes of the international community, because it was accused of committing human rights violations related to the exploitation of immigrants. Many bad issues exposed from being discussed for the first time since the construction of stadiums and facilities carried out by Qatar in preparation for hosting the 2022 World Cup in its news, reported that migrant workers were treated like animals. Issue of accident cases from CCN Indonesia news data, November 30, 2022, 10:45. Recognition of the chairman of the Qatar 2022 World Cup, Hassan Al-Thawadi, 400/500 migrant workers died, and also more people who experienced trauma from falling were survivors because the workers probably did not use standard construction equipment.

World Cup 2022: Islamophobia and Solidarity With Qatar

Reporting on the **Hidayatullah.com** website on Saturday, December 3, 2022. It is clear that apart from wanting to benefit personal goals, Qatar also has an image that wants to get rid of the inherent perceptions of Arab countries about "*Terrorists*", "*Radicals*", "*Extremists*" and such "*Labelling*". Then the strictness of the rules from Qatar to declare that homosexuality or LGBTQ/Lesbian is forbidden for fear of damaging the mind is considered a dangerous attitude and cannot be accepted. These negative issues were directly dismissed by Qatar (FIFA President, Gianni Infantino said that the Arab Cup, which was held for the first time under the FIFA umbrella, would unite the Arab World). The FIFA Arab Cup will be a golden opportunity to unite the Arab world through football. FIFA Arab is also a moment to express solidarity with Palestine which unites Arab nations around

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the world. It also opens the arena for all the Palestinian national anthems in this can call for unity, brotherhood and tolerance. Qatar has succeeded in becoming a unifier as well as a trend setter. In addition, they also have the main goal of increasing the economy and high publicity throughout the world. Potential economic improvements such as hotel rentals, transportation facilities, broadcast rights, ticket sales and while in terms of publications for the 2022 World Cup have the potential to introduce the State of Qatar to the whole world for business opportunities, investment, introduction to Muslim culture and religion.

METHOD

This study uses content analysis method with a qualitative approach. With this method, the contents of the text are classified and analyzed according to certain criteria (Bungin, 2013: 160). This research is a qualitative research using the method of content analysis of text and media. The documentation method is used to find data regarding matters or variables in the form of notes, magazines, agendas and others (Arikunto, 2013: 265). The documentation process is directed at online news discourse with the formation of a positive image theme. The data contained in online news discourse can be used as evidence for conducting research starting with classification, classification, and interpretation. The research used the discourse analysis model of Teun A Van Dijk which in practice looks at social phenomena in society (Eriyanto, 2009: 227). The data contained in the discourse of **CNBC Indonesia**, **14Kompasiana**, and **Hidayatullah.com** can be used as evidence of research data. Research begins with identifying, classifying, and interpreting information. The choice of this research is because the problem is still relevant today and has many interesting contradictions to be studied.

FINDINGS AND DISCUSSION

Research through discourse analysis of the dimensions of the news text of the Teun A Van Dijk model can be concluded as follows. First, the text of the news discourse regarding the discussion includes the relevance of the news text. Second, a discussion of social understanding of the topics discussed in the news text of the Qatar 2022 World Cup. Third, a discussion of the social context found from several background elements, detailed elements of intent, sentence forms (passive and active), and cause and effect.

Online News Discourse Text Analysis Instrument

I.

News/Case : *There are 5 rules in Qatar's 2022 World Cup football party*
Ada 5 Aturan di Pesta Sepakbola Piala Dunia 2022 Qatar
Media Name : CNBC Indonesia, Jakarta (21 November 2022).

II.

News/Case : *Controversy and Positive Impacts of the 2022 World Cup in Qatar*
Kontroversi dan Dampak Positif Piala Dunia 2022 di Qatar
Media Name : 14Kompasiana, Jakarta (22 November 2022).

III.

News/Case : *World Cup 2022: Islamophobia and Solidarity with Qatar*
Piala Dunia 2022: Islamofobia dan Solidaritas pada Qatar
Media Name : Hidayatullah.com, Jakarta (3, December, 2022).

The news excerpt above explains that there were several controversies that occurred when the 2022 FIFA World Cup was held in Qatar. Many issues have become the focus of public and media attention, such as the city of Doha in Qatar being selected to host the World Cup, this being the first time it has been held because it is being held in the Middle East. Controversy Qatar accused of bribing FIFA officials amounting to Rp. 54.2 billion to win the vote to host the world cup. Controversy Middle East countries where the majority of Muslims prohibit the free sale of alcohol, narcotics or free sex.

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Behind the many controversies, there is a moral message that Qatar wants to convey as a representative of the Middle East to convey greetings of peace and unity. Relationship with the message of humanity in the FIFA World Cup Qatar 2022. The issue of division in the world is rife, many people voice support for peace and unity, one of which is the world cup in Qatar 2022. FIFA World Cup Qatar 2022 Accommodates the *International Association Football Federation*. The message of humanity in Ghanim Al Muftah's dialogue and Morgan Freeman is one segment of Ghanim Al Muftah recite the verses of the holy Koran Surah Al Hujurat Ayat 13 about human diversity. Then the opening performance of the Official World Cup song by Kim Jungkook (BTS) entitled *The Word Is Your To Take*. It can be assumed that the regulations in the process of organizing the 2022 World Cup in Qatar are a form of tolerance, national unity, and provide a sense of security for all people who will be present to witness this prestigious match in person.

The rise of the issue of intolerance in society has been going on for a long time. In particular, 2022 has many events of war and division between people. Ranging from wars between countries, riots, or natural disasters. Differences in background are mostly the emergence of certain social conflicts, especially intolerance. The humanitarian message in organizing the FIFA World Cup Qatar is an attitude of respect and respect for human rights by choosing Qatar to host the 2022 World Cup as a media liaison between countries or differences in beliefs. This research also helps dispel subjective and provocative opinions that discredit the Qatar government.

Social Understanding in Terms of News Text Production Qatar world cup 2022

Aspect Social Evidence In Text	Information
<p>1.1. CASE</p> <p>Pertama kalinya Piala Dunia 2022 digelar di Negara Timur Tengah. Adat-istiadat serta budaya yang dipengaruhi syariat agama turut memengaruhi gelaran Piala Dunia di Qatar. Karena alasan ini juga, sejumlah penggemar bola menilai bahwa <u>Piala Dunia tahun ini penuh kontroversi, mulai dari larangan alkohol hingga ancaman bagi kelompok LGBT dan pelaku seks di luar pernikahan.</u></p>	<p><u>dipaksakan melekat pada Qatar</u>, negara Arab pertama yang akan menjadi tuan rumah Piala Dunia 2022 <u>“teroris, radikal, ekstrimis, dan labelling semacamnya”</u>. When the news on the side is found, the core form of assistance is an explanation first. This can be seen clearly from the explanation of the contents of the news which seems to explain the support in the news title first and then followed by several explanatory sentences that support the discourse in the news being <u>discussed</u></p>
<p>1.2. CASE</p> <p>Piala dunia juga tidak terlepas dari kontroversi yang terjadi. Tidak sedikit pecinta sepak bola merasakan banyak sekali kontroversi mengiringi persiapan Qatar jelang pelaksanaan Piala Dunia 2022. <u>Pertama, isu minimnya perhatian terhadap keselamatan pekerja yang membangun stadion-stadion megah di sana.</u> <u>Kedua, isu Qatar menyuap mantan presiden FIFA, Sepp Blatter untuk menjadikan mereka sebagai tuan rumah Piala Dunia 2022.</u> <u>Ketiga, isu LGBT menjadi perhatian serius dari sejumlah penggemar sepakbola dunia, terutama di Eropa, yang lantang menyuarakan hak-hak kelompok LGBT.</u> Sebagian dari mereka mengaku batal menonton secara langsung di Qatar karena merasa tidak aman dianggap sebagai sebuah kejahatan menurut aturan Qatar yang diancam hukuman pidana.</p>	<p>From the news issues on the side, the author provides a point of view that every big activity performance always has political, economic and group interest elements. The Controversial Media Dependence Theory is a theory about mass communication which states that the more a person depends on a medium to meet his needs. Even though they have the same background, their relevance to the cases, the issues reported are then clarified with supporting explanations from the initial delivery to the end. Likewise, details, intentions, and presuppositions in the explanation will certainly be found as well as support and those that do not support in each news story will have a slightly different tone.</p>
<p>1.3. CASE</p> <p><u>Qatar “diserang” islamofobia selama penyelenggaraan Piala Dunia, karena melarang kaum LGBTQ masuk negaranya. Jelas tergambar image yang ingin</u></p>	<p>The choice of words is not found in the news, this is because the news writer directly clearly explains the news with words or sentences that are directly directed to the</p>

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core of the news with delivery that is easy for the reader to understand. Pronouns in the news that are used to designate subjects or objects without having to repeat the

mention are found because they mention humans directly explained in the news, such as the focus of the news.

Aspect Studying Social Construction Qatar world cup 2022

Hosting the World Cup is always contested by many countries. Like Qatar, which has to compete with America, Japan and other countries to be the host. There is a special reason why many countries are fighting for the World Cup. Because, there will be great economic and tourism potential in this grand football event. But specifically for Qatar, this year many football fans criticized Qatar's selection as the host. From an economic point of view, there is nothing interesting about Qatar being the host of the 2022 World Cup. He said Qatar had become a major economic actor in the Middle East region. Where Qatar is one of the richest countries as a world oil producer.

In addition, Qatar also has an economic growth of 6.3 percent and a Gross Domestic Product (GDP) of US\$176 billion. Yunan said, according to development theory, Qatar's decision to host the football event which is held once every four years is called the reverse theory. Basically every country that hosts the World Cup will experience the same pattern from the economic sector. Among them is an increase in travel industry revenue, both from transportation and hospitality. That too with the potential for opening new markets in the field of global merch or brands. In fact, Qatar became the country that poured out the most money in the history of the World Cup, which was worth 200 billion US dollars.

This huge cost is a form of pride for Qatar as a country whose economic potential is no joke. Besides that, it is also a proof of the theory of development. If in the past only large countries survived from the world economy, they could even control it, now countries that are considered small can also take part in the world economy. If viewed from the theory of economic rationality, the amount of funds spent by Qatar in the World Cup was based on ego and interests. In this case, Qatar as an economic actor does not only have objectives in the economic aspect, but this also goes hand in hand with other interests.

This research discusses Qatar to host the FIFA World Cup 2022. The experiences of the five host countries for the previous FIFA World Cup have yet to show significant results in terms of the economy. So the question arises that Qatar is motivated to host the 2022 FIFA World Cup. This study explains Qatar's behavior by using the concept of State Behavior by The four drivers in policy making are interests, threats, opportunities and capabilities. Objective is Qatar's dominant driver to host the 2022 FIFA World Cup. This research uses qualitative research methods with motivational explanative techniques. The findings in this study show that politics, economy and core values are Qatar's main motivations in hosting the 2022 FIFA World Cup.

Reporting on controversies with lots of criticism from many aspects of regulatory policy, government views, to implementation which reported many good and bad responses has attracted the attention of the world's eyes. Qatar can be said to have succeeded in capturing the world's attention for this controversy regardless of whether it is good or bad. here Qatar shows that good results after the completion of the implementation of the world cup.

CONCLUSIONS

Based on the results of research through text analysis of news discourse dimensions of the Teun A Van Dijk. Several things were concluded about the superstructure explaining the coherence and meaning of the text, discussing the structure of social understanding in the news discussing flashbacks or evaluating the implementation of Qatar's World Cup policies along with the issues of the Qatar controversy case by studying social construction in a positive image explaining the shared Qatari government. Third, a discussion of the structure that has been found from several elements of news understanding, news details, news intentions, news assumptions with passive and active sentence forms.

REFERENCES

- 1) Arikunto, S. (2013). *Prosedur Penelitian: Suatu Pendekatan Praktis*. Jakarta: PT. Rineka Cipta
- 2) Baryadi, P. (2002). *Dasar-dasar Analisis Wacana dalam Ilmu Bahasa*. Yogyakarta: Pustaka Gondhosuli.
- 3) Bungin, B. (2013). *Analisis Data Penelitian Kualitatif*. Raja Grafindo Persada.
- 4) Eriyanto. (2011). *Analisis Wacana: Pengantar Analisis Teks Media*. Yogyakarta: Percetakan Lkis.
- 5) Jorgensen. (2007). *Analisis Wacana: Teori dan Metode*. Yogyakarta: Pustaka Pelajar.
- 6) *Kontroversi dan Dampak Positif Piala Dunia 2022 di Qatar*. (28 November 2022). Kompasiana.
- 7) *Piala Dunia 2022: Islamofobia dan Solidaritas pada Qatar*. (12 Desember 2022). Admin Hidcom.
- 8) Santoso., & Gallant, K. A. (2016). *Citra Publik Presiden Republik Indonesia Pada Pemberitaan Di Harian Suara Merdeka, Tabloid Tempo, Dan Harian Republika: Kajian Analisis Wacana Kritis*. Universitas Negeri Semarang, Indonesia. Seloka.
- 9) Sudono., & Endro, N. W. A. (2022). *Pembentukan Citra Positif Melalui Aspek Gramatika Dalam Wacana Alat PeragaKampanye*. *Jalabahasa* Vol. 18, No. 1, Mei 2022, hlm. 36—45.

Formation of a Positive Image Through FIFA Policy in Qatar 2022 on Online News Media (Model Teun A Van Dijk)

- 10) Sumarlam. (2020). Analisis Wacana Kritis Model Teun A Van Dijk pada Surat Kabar Online dengan Tajuk Kilas Balik Pembelajaran Jarak Jauh Akibat Pandemi Covid-19. GERAM (GERAKAN AKTIF MENULIS).
- 11) 5 Aturan Nonton Piala Dunia Qatar, dari Alkohol sampai Busana. (21 November 2022). Tim Redaksi, CNBC Indonesia.



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Interaction Between Hot Water Immersion (HWI) and Cold Water Immersion (CWI) Methods with Gender on Decreasing Lactic Acid



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ABSTRACT:

Purpose: The purpose of this study was to examine Interaction Between Hot Water Immersion (HWI) and Cold Water Immersion (CWI) Methods With Gender on Decreasing Lactic Acid.

Materials and Methods: This research is an experiment with 2x2 factorial design. The population of this study were all 40 PJKR students in Sukabumi City. Data collection was carried out by means of a test, which included a pre-test and post-test for lactic acid levels after running 100 m. Data analysis in this study used two way anava with a significance level of <0.05. Then proceed with the paired samples test to compare the averages of the two related samples taken from the same population.

Results: Based on the results, in the male group there was an average decrease in lactic acid of 3,621 for the HWI method, with a standard error of 0,183. The 95% confidence interval in the male group for the HWI method ranged from 3,249 to 3,993. As for the CWI method, there was an average decrease in lactic acid of 3,304 with a standard error of 0,183. The 95% confidence interval in the male group for the CWI method ranged from 2,932 to 3,676. In the women's group, the average decrease in lactic acid was 3,200 for the HWI method, with a standard error of 0,280. A 95% confidence interval in the women's group for the HWI method was not available in the data presented. Meanwhile, for the CWI method, there was an average decrease in lactic acid of 3,217 with a standard error of 0,280. The 95% confidence interval in the female group for the CWI method ranged from 2,648 to 3,785.

Conclusions: Based on the research results, it can be concluded that there is no significant interaction between HWI and CWI therapy methods and gender in reducing lactic acid. The effect of HWI and CWI therapy on reducing lactic acid did not differ between men and women. There is an effect of HWI therapy on decreasing lactic acid. There is an effect of CWI therapy on decreasing lactic acid

KEYWORDS: CWI, HWI, Anaerobic Exercise, Lactic Acid, Gender

INTRODUCTION

Sports is one form of physical education, as it helps participants develop and hone basic motor skills and specific sports techniques (Bangun, 2016). Exercise, in a broad sense, is any activity that a person does to maintain or improve his physical and mental health (Social et al., 2015). Sport is an effort to improve the quality of human life, in addition to aiming to form an ideal body, it is also beneficial for mental health, including creating a human body system that can run smoothly (Saputra & Agus, 2021). In the context of physical activities, sports include both planned and unplanned movements, so unplanned activities such as household chores and worship are still considered sports. However, if the sport is planned, the movement and the goal is to achieve a certain goal is called achievement sports (Supriatna, 2015).

In sports achievements or in preparing for certain events a coach or athlete not only focuses on the training program designed and its application in the field, but besides that a coach must also pay attention to the process *Recovery* athlete (Hermawan et al., 2020). The training program will be successful if the athlete who is the executor or object of training gets the recovery process (*recovery*) which is appropriate for overcompensation to occur. Overcompensation is the adjustment of a stimulus to an excess load (*overload*), Where in the next load the stimulus has capabilities above its initial ability. So to get the peak performance of an athlete, it needs harmony between training and *Recovery* (Matjan, 2009).

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When there is a lot to do without enough time to rest, the body uses energy from anaerobic glycolysis as its main fuel source. This can lead to a buildup of lactic acid in the blood, which in turn prevents muscle cells from taking in oxygen-rich blood and oxygen, leading to fatigue (Made Yoga Putra, 2015). The inability to maintain muscle contractions is what is about muscle fatigue. The three types of fatigue are central fatigue, muscle fatigue, and neuromuscular fatigue. When lactic acid builds up in muscles, it can cause fatigue (Sandi, 2019). Decreased muscle receptivity to stimulation is a direct result of lactic acid buildup. Depletion of energy reserves can be caused by several factors, including energy supply problems, ATP + PC, anaerobic glycolysis, accumulation of products in the form of H⁺, lactic acid, mechanical inability of muscles to concentrate, and changes in the nervous system (Ariani, 2011).

Fatigue is more common in women than men because of biological variations between the sexes, namely monthly biological cycles in a woman's body system that can affect her physical and psychological health and cause fatigue. affects the increase in lactic acid production (Heza, 2018). On the other hand, in general, compared to women, men have larger muscle mass, higher hemoglobin concentration, more blood volume, and higher maximum oxygen consumption. (Zhang & Ji, 2016)

The term "burnout" refers to a decrease in performance and output that may occur as a direct result of engaging in certain types of work or physical activity. Physical and mental fatigue are both possible results of exercise fatigue and it is clear that people cannot function properly when exhausted (Bafirman, 2013). Negative effects of fatigue can be expected if circumstances cannot be predicted with recovery as training continues (overtraining).

By relaxing the body and slowing the heart rate, warm water therapy can also lower blood pressure (Malibel, 2020). Reducing fatigue and increasing muscle endurance are two of the many benefits of hot water therapy (Festiawan, 2021). Cold water therapy, also known as Cold Therapy, has many advantages, including its low cost, speed, and ease of application (Nurusyaikhi et al., 2022). Cold water immersion immediately after exercise is believed to reduce muscle damage and discomfort, possibly contributing to faster recovery of neuromuscular function (Setiawan & Kusumawardhana, 2021). Cold water immersion can reduce muscle stiffness and the amount of post-workout damage after strenuous eccentric activity. Therefore, a sportsman must be in excellent physical condition, with a lot of strength and stamina, for that there needs to be a treatment to overcome the decline in muscle function and efforts to prevent injuries to sportsmen (Harun & Syafriani, 2021).

Based on the problems in this study, it is necessary to limit the problem because of the limitations of the author, the problem is limited to the following areas: the effect of cold water immersion and hot water immersion therapy methods on lactic acid reduction in terms of gender. in terms of gender (experimental study on Physical Education, Health and Recreation students in Sukabumi).

METHOD

This research was carried out with 40 PJKR students in Sukabumi City. The training will be divided into 4 predetermined groups. The purpose of this study was to investigate the effect of cold water immersion and hot water immersion therapy after anaerobic exercise on the reduction of lactic acid in terms of gender (experimental study on Physical Health and Recreation Education students in Sukabumi). The study was an experiment with a 2x2 factorial design, a comparative research pattern that allows researchers to analyze the impact of four independent variables (Hadi, 2011). This investigation protocol is as follows.

Table. Experimental Design with 2x2 Factorial Design

	THERAPY METHODS (A)	
GENDER (B)	<i>Cold Water Immersion (A1)</i>	<i>Hot Water Immersion (A2)</i>
Male (B1)	a1b1	A2B1
Female (B2)	a1b2	A2B2

Information:

a1b1 : Group of male students with Cold Water Immersion against Decreased lactic acid levels

a1b2 : Group of female students with Cold Water Immersion against Decreased lactic acid levels

a2b1 : Group of male students with Hot Water Immersion against Decreased lactic acid levels

a2b2 : Group of female students with Hot Water Immersion against Decreased lactic acid levels

Data collection was carried out by means of a test, which included a pre-test and post-test for lactic acid levels after running 100 m. The test carried out in this study was the measurement of lactic acid before and after being given treatment. Measurement of lactic acid levels using accutrend plus, test strips for lactic acid levels, sterile needles, cotton and alcohol. Group

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I did a 100 m sprint. After running, the sample was checked for lactic acid levels and then given the CWI treatment. Next, group II did a 100 m sprint. After running, the sample was checked for lactic acid levels and then given the HWI treatment. Blood collection was carried out using a sterile needle by cleaning the sample's fingertip with a cotton swab that had been given alcohol, then the needle was shot at the fingertip and pressed so that the blood would come out. After that, the blood is directly touched to the side edge of the lactate strip that has been attached to the device. The blood will immediately seep to the end of the strip and wait a moment for the results to appear on the screen. Results are recorded on an assessment blank.

In this study using ANOVA 2x2 factorial design. Using two way anava in the SPSS 25 Test of Between Subject Effects with a significance level of <0.05. If the P value is greater than 0.05 then the data is declared to have no significant effect, conversely if the P value is less than 0.05 then the data is declared to have a significant effect.

RESULTS

Table 1. The Effect of Interaction Between Therapy Methods and Gender on Decreasing Lactic Acid

Gender	Method	Mean	Std. Error	95% Confidence Interval		F	Sig.
				Lower Bound	Upper Bound		
Man	HWI	3,621	0,183	3,249	3,993	0,499	0,484
	CWI	3,304	0,183	2,932	3,676		
Woman	HWI	3,200	0,280	2,632	3,768		
	CWI	3,217	0,280	2,648	3,785		

This study aims to investigate the effect of the interaction between Hot Water Immersion (HWI) and Cold Water Immersion (CWI) therapy methods with sex on lactic acid reduction. The data provided included mean lactic acid reduction, standard error, 95% confidence interval, F value, and significance level (Sig.).

Based on the results presented in the table, in the male group there was an average decrease in lactic acid of 3,621 for the HWI method, with a standard error of 0,183. The 95% confidence interval in the male group for the HWI method ranged from 3,249 to 3,993. As for the CWI method, there was an average decrease in lactic acid of 3,304 with a standard error of 0,183. The 95% confidence interval in the male group for the CWI method ranged from 2,932 to 3,676.

In the women's group, the average decrease in lactic acid was 3,200 for the HWI method, with a standard error of 0,280. A 95% confidence interval in the women's group for the HWI method was not available in the data presented. Meanwhile, for the CWI method, there was an average decrease in lactic acid of 3,217 with a standard error of 0,280. The 95% confidence interval in the female group for the CWI method ranged from 2,648 to 3,785.

Furthermore, the results of the analysis using the F test showed an F value of 0,499 with a level of significance (Sig.) amounted to 0,484. Based on the F value and the level of significance obtained, it can be concluded that there is no significant interaction between HWI and CWI therapy methods with sex to lactic acid reduction.

Table 2. The effect of the HWI method on the reduction of lactic acid

Pair 1	Paired Differences	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	Df	Sig. (2-tailed)
					Lower	Upper			
					PRETES – POSTES	5.56000			

Based on the data presented, it was found that the average difference between pretes and postes was 5,56, with a standard deviation of 0,61955 and a mean standard error of 0,13854. The 95% confidence interval for this difference is in the range of 5,27004 to 5,84996. The results of the statistical test show that the calculated t value is 40.134 with a degree of freedom (df) of 19. The significance value (Sig.) obtained is 0,000, which is smaller than the significance level of α (usually 0,05). Therefore, there is a significant difference between the values of pretes and postes after HWI therapy against lactic acid reduction.

The effect of CWI therapy method on lactic acid can be seen in the following table:

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Table 3. The effect of the CWI method on the reduction of lactic acid

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETES POSTES	6.06500	.63951	.14300	5.76570	6.36430	42.413	19	.000

The results of this analysis, paired sample tests were carried out (paired samples test) to test the effect of therapeutic methods *Cold Water Immersion* (CWI) against lactic acid decrease. The table presented shows the pairwise difference between pretest (before therapy) and postes (after therapy) values in the same sample.

Based on the data presented, it can be seen that the average difference between pretes and postes is 6,065, with a standard deviation of 0,63951 and a mean standard error of 0,14300. The 95% confidence interval for this difference is in the range of 5,76570 to 6,36430. The results of the statistical test showed that the calculated t value was 42,413 with a degree of freedom (df) of 19. In addition, a significance value (Sig.) of 0,000 is obtained, which is smaller than the significance level of α (usually 0,05). Therefore, it can be concluded that there is a significant difference between pretest and postes values after CWI therapy against lactic acid reduction.

DISCUSSION

Exercise that is carried out routinely or programmed certainly has an effect or influence on the body which is the stimulus and also has the ability to endure or VO2Max. Planned exercises provide benefits for the body, namely forming an ideal body posture, normalizing body movement functions, strengthening the body's physiological and anatomical systems (Falaahudin et al., 2022). Conversely, if the training is not carried out according to training principles, the form of training that is not properly planned according to the needs and conditions of the athlete will have a negative impact on the athlete (Iwandana et al., 2021). Regarding sports, it has to do with exercise, in training, of course, there is volume, intensity and so on (Lestari et al., 2022). Various forms of exercise, both aerobic and anaerobic, are a support system to support the success of training. Exercise, both aerobic and anaerobic, especially at high-intensity exercise, can cause fatigue, which in turn causes a buildup of lactic acid. The fast running style is defined as all types of running that are carried out at maximum speed from the start of the race to (Nurhayati, 2018).

Hot water impressions were carried out at C36C, with immersion times examined in the literature ranging from 10-24 minutes (Versey et al., 2013). Full body immersion is usually performed; however, similar to CWI, one study has examined the effect of local heating on a body part (arm). Participants are usually passive during immersion, although underwater jets are often available for massage. Hot pools may be more widely available than cold pools because they may be part of a swimming pool complex, and hot temperatures are easier to achieve than cold ones in a home or hotel bath. Similar to the CWI, a portable tub or pool attached to a heating unit may be more practical in some competition or training venues. Hot water promotes vasodilation, causing increased blood flow and facilitating the supply of oxygen and antibodies, clearance of metabolites, and reduction of muscle spasms and pain (Tavares et al., 2018).

The goal of cold therapy is to lower the temperature of the injured area by absorbing the calories there. And also to reduce tissue temperature through the mechanism of cold therapy for recovery after exercise is largely attributed to its vasoconstrictor effect, which reduces inflammatory reactions through decreasing cell metabolism by losing the body's natural heat (conduction). Because the body must expend energy to melt the ice, wet ice therapy is more effective at lowering the temperature than using packaged ice. Recovery techniques such as cold water immersion (CWI) are frequently used by elite athletes. It is routinely recommended as beneficial for enhancing physiological and psychological recovery after exercise, especially as it reduces delayed onset muscle soreness. Indeed, it has been suggested that CWI may be useful for improving subsequent training quality and ultimately competitive performance through better recovery and the accumulative effect of increasing the quality and quantity of training. The use of cold on the body to relieve symptoms of illness or injury is known as cold therapy. There are a number of applications for cold therapy, including ice packs and cold showers. Cryotherapy refers to the practice of using extremely cold temperatures to cause tissue damage; often, liquid nitrogen is used for this purpose. To relieve the symptoms of many physical conditions, cold treatment (cold therapy) sometimes involves using ice packs or other cold methods such as ice and cold sprays. Alternating hot-cold immersion is one of the most popular techniques and is practiced with increasing frequency in aiding recovery after physical training and competition. This can be given at 10°C for 10 or 20 minutes. The blood test results from this study also showed a negative effect of CWI on recovery. Post-exercise peak blood lactate concentrations showed a significant decrease after

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CWI when compared with the first exercise test and control tests. It is proposed that CWI may improve recovery by reducing edema and inflammation after exercise-induced muscle damage (Rowse et al., 2014).

CONCLUSION

Based on the research results, it can be concluded that there is no significant interaction between HWI and CWI therapy methods and gender in reducing lactic acid. The effect of HWI and CWI therapy on reducing lactic acid did not differ between men and women. There is an effect of HWI therapy on decreasing lactic acid. There is an effect of CWI therapy on decreasing lactic acid

REFERENCES

- 1) Ariani, T. A. (2011). Sistem Neurobehaviour. *Journal of Chemical Information and Modeling*, 1, 8–9.
- 2) Bafirman. (2013). Media Ilmu Keolahragaan Indonesia. *Jurnal Media Ilmu Keolahragaan Indonesia*, 3(1), 1–8.
- 3) Bangun, S. Y. (2016). Peran Pendidikan Jasmani dan Olahraga Pada Lembaga Pendidikan di Indonesia. *Publikasi Pendidikan*, 6(3), 8–16. <https://doi.org/10.26858/publikan.v6i3.2270>
- 4) Falaahudin, A., Dody Tri Iwandana, Ali Md Nadzalan, & Moh. Kholil. (2022). Sosialisasi Meningkatkan Kondisi Fisik Atlet Tinju Kabupaten Bantul. *Jurnal Bina Pengabdian Kepada Masyarakat*, 3(1), 7–12. <https://doi.org/10.55081/jbpbkm.v3i1.666>
- 5) Festiawan, R. (2021). Terapi Dan Rehabilitasi Cedera Olahraga. *OSF Preprints. January, January*. <https://doi.org/10.31219/osf.io/gzcr3>
- 6) Hadi, S. (2011). *Metodologi Research Jilid 3* (3rd ed.). Andi Offset.
- 7) Harun, H., & Syafriani, R. (2021). Efek rendam air dingin terhadap kadar laktat, power otot tungkai dan nyeri otot pada atlet futsal mahasiswa. *Jorpres (Jurnal Olahraga Prestasi)*, 17(2), 163–170. <https://doi.org/10.21831/jorpres.v17i2.44615>
- 8) Hermawan, I., Maslikah, U., Masyhur, M., & Jariono, G. (2020). Pelatihan Kondisi Fisik Pelatih Cabang Olahraga Kota Depok Jawa Barat Dalam Menghadapi Persiapan PORPROV 2022. *Prosiding Seminar Nasional Pengabdian Kepada Masyarakat 2020 (SNPPM-2020)*, 1(1), 371–380.
- 9) Heza, F. N. (2018). Asam Laktat Indikator Kelelahan Dan Kerusakan Saat Berolahraga. *Prosiding Seminar Nasional Dan Call for Papers*, 8(November), 178–186.
- 10) Iwandana, D. T., Falaahudin, A., & Mubarak, Z. (2021). Competitive Anxiety in Bantul District Athletes Who Have the Potential to Win Gold Medals in Porda Diy. *Social Science Learning Education Journal*, 06(11), 767–770. <https://doi.org/10.15520/sslej.v6i11.2886>
- 11) Lestari, E. A., Tarigan, B. S., Nabillah, A. A., Safei, I., & Iwandana, D. T. (2022). Survei Kondisi VO2max Atlet Tarung Derajat Kabupaten Bantul. *Jurnal Ilmiah STOK Bina Guna Medan*, 10(2), 58–63.
- 12) Made Yoga Putra, N. & H. (2015). kelelahan dan recovery dalam olahraga. *Ekp*, 13(3), 1576–1580.
- 13) Malibel, Y. A. A. (2020). Pengaruh Pemberian Hidroterapi (Rendam Kaki Air Hangat) Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi Di Wilayah Kerja Puskesmas Sikumana Kota Kupang. *CHMK Health Journal*, 4(Januari), 0–7.
- 14) Matjan, B. N. (2009). Komponen-Komponen Latihan dan Faktor-Faktor Pendukung Kualitas Peak Performance Atlet. *Jurnal Kepeleatihan Olahraga*, 1(1).
- 15) Nurhayati. (2018). Analisis Gerak Nomor Lari Sprint 100 Meter Putra Cabang Olahraga Atletik. *Journal of Physical Therapy Science*, 9(1), 1–11.
- 16) Nuruyaikhi, M., Nugroho, H., Studi, P., Keolahragaan, I., & Keolahragaan, F. (2022). *Cold Water Immersion Therapy for Post-Exercise Recovery : Systematic Literature Review Terapi Cold Water Immersion Untuk Pemulihan Pasca Latihan : Systematic Literature Review bekerja secara optimal (Amrullah , 2015). Berbagai mekanisme telah*.
- 17) Sandi. (2019). Jenis Keterampilan dan Pengelompokan Olahraga. *Jurnal Pendidikan Kesehatan Rekreasi*, 5(2), 64–73.
- 18) Saputra, G. Y., & Agus, R. M. (2021). Minat Siswa Kelas Vii Dan Viii Dalam Mengikuti Pembelajaran Pendidikan Jasmani Olahraga Dan Kesehatan Smp Negeri 15 Mesuji. *Journal of Physical Education (JouPE)*, 2(1), 17–25.
- 19) Setiawan, A., & Kusumawardhana, B. (2021). *Perbandingan Metode Rendam Menggunakan Air Hangat Dan Airdingin Terhadap Penurunan Kadar Asam Laktat Setelah Universitas PGRI Semarang. November*, 480–491.
- 20) Sosial, I., Siswa, A., & Sma, D. I. (2015). Survei Penerapan Nilai-Nilai Positif Olahraga Dalam Interaksi Sosial Antar Siswa Di Sma Negeri Se-Kabupaten Wonosobo Tahun 2014/2015. *E-Jurnal Physical Education, Sport(Health and Recreation)*, 2251–2259. <https://doi.org/10.15294/active.v4i12.8799>
- 21) Supriatna, E. (2015). Kegiatan Olahraga Dan Kesenambungan Energi. *Jurnal Visi Ilmu Pendidikan*. <https://doi.org/10.26418/jvip.v7i1.16866>

Interaction Between Hot Water Immersion (HWI) and Cold Water Immersion (CWI) Methods with Gender on Decreasing Lactic Acid

- 22) Tavares, F., Walker, O., Healey, P., Smith, T. B., & Driller, M. (2018). Practical applications of water immersion recovery modalities for team sports. *Strength and Conditioning Journal*, 40(4), 48–60. <https://doi.org/10.1519/SSC.0000000000000380>
- 23) Versey, N. G., Halson, S. L., & Dawson, B. T. (2013). Water immersion recovery for athletes: Effect on exercise performance and practical recommendations. *Sports Medicine*, 43(11), 1101–1130. <https://doi.org/10.1007/s40279-013-0063-8>
- 24) Zhang, J. Q., & Ji, L. L. (2016). Gender Differences in Peak Blood Lactate Concentration and Lactate Removal. *Ann Sports Med Res*, 3(7), 1088.



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Analysis of Rough Rice Moisture Content through Infrared Thermography (IRT)



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ABSTRACT: Rough rice's moisture content should be measured in order to ensure its quality, preservation, and proper handling all through storage and processing. When assessing and monitoring the quality of agricultural products, such as rough rice, moisture content is an important consideration. For measuring the moisture content of various agricultural products, infrared thermography (IRT) is a quick and easy non-destructive technique that has shown effectiveness. Traditional methods for determining moisture content require a long time and require sample destruction. Images of the sample were captured with a FLIR ONE thermal camera. The average value of the pixels in the thermal image was applied to create a thermal index that represented each sample. This study aims to investigate the feasibility and accuracy of IRT as a method for analysing the moisture content of rough rice. The results of the study showed that 87.30% accuracy when measuring moisture content was achieved with infrared thermography. Based to the results, rough rice's moisture content may be accurately identified through infrared thermography evaluation using wavelengths analysis. The use of non-contact, non-destructive methods to measure the moisture content of rough rice can be highly beneficial to farmers, rice millers, and other relevant governmental organizations. The results demonstrate the potential of infrared thermography as a rapid and non-destructive tool for moisture content evaluation in rough rice, offering significant advantages in terms of time efficiency and sample preservation.

KEYWORDS: Infrared Thermography, Moisture Content, Image Processing, Rough Rice, FLIR Thermal Studio, Matlab, non-destructive evaluation, quality control.

I. INTRODUCTION

An essential sector that supports both the economy on a whole and our supply of food is rice farming. Although there are several of challenges with rice production in the Philippines, including limited access to modern farming technologies, managing pests and diseases, and the effects of natural catastrophes. To overcome these challenges and increase rice production, the government and agricultural organizations are working aggressively.

The moisture content of rough rice is an important aspect to consider when analyzing its quality and shelf life because it has a direct impact on how well it stores, mills, and produces the finished product. Rice is one of the agricultural crops grown in the Philippines, which has an extensive background of being referred to as an agricultural country. Most Filipinos depend on agriculture to provide for their families and everyday needs. Farming combines food production and income generation, offering food security, self-sustainability. It provides a source of income through selling agricultural products [1].

A fresh paradigm of technology that will reduce costs, increase efficiency, and offer insights for development will be brought about by precision farming combined with the use of ICT especially in rural farm areas. The actual adoption of this technology is yet somewhat limited, but it is captivating interest, particularly among young farmers who have learned that rice farming is more than just tedious work and can be made smarter through the application of cutting-edge technology [2]. Aspects like shape, color, and grain moisture content all determine rice quality. These characteristics determine the properties, physical appearance, and marketability of the rice. Additional factors include cultural preferences, aroma, texture, and size [3]. It's important for assessing rough rice's moisture content (MC) in the farming industry. The need for a non-destructive method for assessing MC has been brought on by the increasing price of agricultural goods made from rice.

Furthermore, we are able to accurately determine the moisture content (MC) distribution of the rice samples by measuring an individual rice kernel.

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When rice has a high moisture content (MC), frequently between 25 and 40% dry basis (db) or 25 and 32% wet basis (wb), it is frequently harvested. Rice has a high respiration rate and is especially vulnerable to attack from microorganisms' insects, and pests at this moisture level. In marketing, it's important to know the grain bulk's average MC. For example, a cargo of 10,000 tons with 15% MC (w.b. is used herein unless otherwise specified) can equal 1,500 tons of water. At a price of USD 0.10 per kg, that is worth USD 10,000. Both the buyer and the seller must be informed of the amount of this costly water that is utilized [4].

Several mechanical properties of wood are significantly affected by moisture content (MC). The amount of water mass present in the material divided by oven-dry mass is the definition of oven-dry base MC, a term frequently used in the lumber industry. The most common way to represent MC is as an amount of oven-dry mass. However, measuring MC is not just done using the oven-dry method. Using the relative humidity and temperature of the environment, we may calculate the MC of the specimen. Depending on the temperature and relative humidity of the surroundings, wood specimens will eventually attain a moisture equilibrium. Equilibrium moisture content (EMC) at this moment can be calculated using temperature and relative humidity [5]. The relationship between the rough rice's moisture content and heat index can be determined using Pearson's correlation coefficient. The researcher additionally emphasizes that each set of variables must have a bivariate normal distribution in order for Pearson's correlation coefficient to be applicable to it. The strength and direction of the relationship between two variables can be determined by a correlation coefficient. A complete positive correlation is denoted by a coefficient of 1, whereas a perfect negative correlation is denoted by a coefficient of -1. The variables are more tightly related to one another in the correct manner as the coefficient gets closer to these extremes. There is no linear relationship between the variables, as indicated by a coefficient of 0 [6].

However, other research showed that traditional methods of measuring moisture content—such as oven drying and moisture meters—are time-consuming, require for sample destruction, and possibly have accuracy and representativeness limitations. Infrared thermography has come into its own as an alternative possibility in recent years for agricultural commodities' non-destructive moisture content analysis. Many different areas, including image classification, object identification, facial recognition, and medical imaging, use computer vision and neural networks. By applying visual data to solve a variety of problems, they revolutionize AI [7]. Many image processing techniques can be utilized to measure the vast majority of parameters suitable for quality analysis, including image gathering, preprocessing, feature extraction, segmentation, parameter measurement, calibration, and analysis. The selected algorithms depend on the data inputs and the objects under study. The purpose of expanding this work is to develop a system that can analyze rice grains based on each parameter that may be utilized to improve the quality of the grain.

A solution like this should be less expensive and require less time for quality analysis. [8]. Concentrating on various sampling procedures, sample sizes, sample preprocessing methods, various characteristics, and different models of neural networks in order to meet the needs of the rice industry [9]. To improve accuracy, components like color and texture can be extracted. Additionally, it is possible to examine the identification of different rice kernel flaws, such as fissures [10]. In the fields of agriculture, production, rice storage, trading, and processing, it is necessary to carry out quick, non-destructive moisture content measurements. It would be more beneficial for processing and pricing if the instrument could provide both the mean and the variation of moisture content samples. [4].

This study aims to explore the application of IRT for moisture content analysis in rough rice that benefits the farmers, rice millers, and consumers and compare its performance with conventional methods.

II. MATERIALS AND METHODS

A. Rough Rice Sample

The rough rice samples used in this study came from a Philippines rice granary. The samples were also obtained before to drying and throughout the harvest season in order to obtain samples of real rough rice. In this study, three (3) different cultivars of rough rice were used, all of which are widely farmed in the Philippines.

Rough rice is normally harvested when the moisture content is between 20% and 25%. The moisture content of the rough rice was determined using a Smart Sensor AR991 Grain Moisture Meter. A grain moisture meter can check rough rice with moisture levels between 11% and 55%. Three measurements of rough rice were taken, and an average moisture content was determined. The data was used to show how precisely the moisture content of the rough rice could be determined.

The samples' true moisture content was determined using a sun-drying method akin to that used by Filipino farmers. Samples of the rough rice were prepared for each of these two functions in order to assess the purity and moisture level of the rough rice. In this study, 2,238 samples were evaluated and categorized by analysis.

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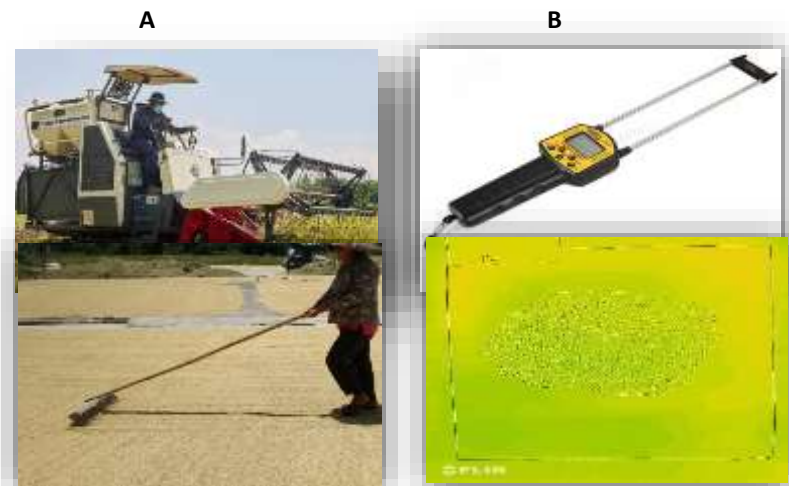


Figure 1. (A) Rough rice harvesting; (B) AR991 grain moisture meter; (C) Sun drying; (D) IR Image of rough rice.

The procedure for collecting samples, from harvesting to drying to classification, is shown in Figure. 1. Rice reapers are agricultural tools used to harvest rice crops. They are sometimes referred to as combination harvesters or rice harvesters. In the Philippines, they are used to mechanize the processes of harvesting rice, separating the grains from the chaff, and cutting and collecting rice stalks. To increase output, ease manpower shortages, and boost the effectiveness of the rice farming sector, the government and numerous organizations support the usage of rice reapers. Sun drying is a common and traditional method in the Philippines for drying raw rice. Depending on multiple circumstances, sun drying can take a few days to a week. To make sure the rice has the proper moisture content, farmers make use of moisture testing. Sun drying is cost-effective, but it has limitations such as weather dependence and potential quality problems.

B. Thermal Camera

The selected spectrum of wavelengths will be represented by an infrared camera that can acquire thermal images. For accurate recording of changes in rice surface temperature, the camera's resolution and accuracy should be sufficient. as shown in figure 2. The FLIR ONE Gen 3 thermal camera, which had a visual resolution of 1440 x 1080 and a thermal resolution of 80 x 60, was attached to a mobile phone and stored in the FLIR Ignite cloud. FLIR ONE combines the conventional and thermal images using Multi Spectral Dynamic Technology (MSX) [11].



Figure 2. FLIR One Gen 3 Thermal Camera

Analysis of Rough Rice Moisture Content through Infrared Thermography (IRT)

C. Experimental Setup

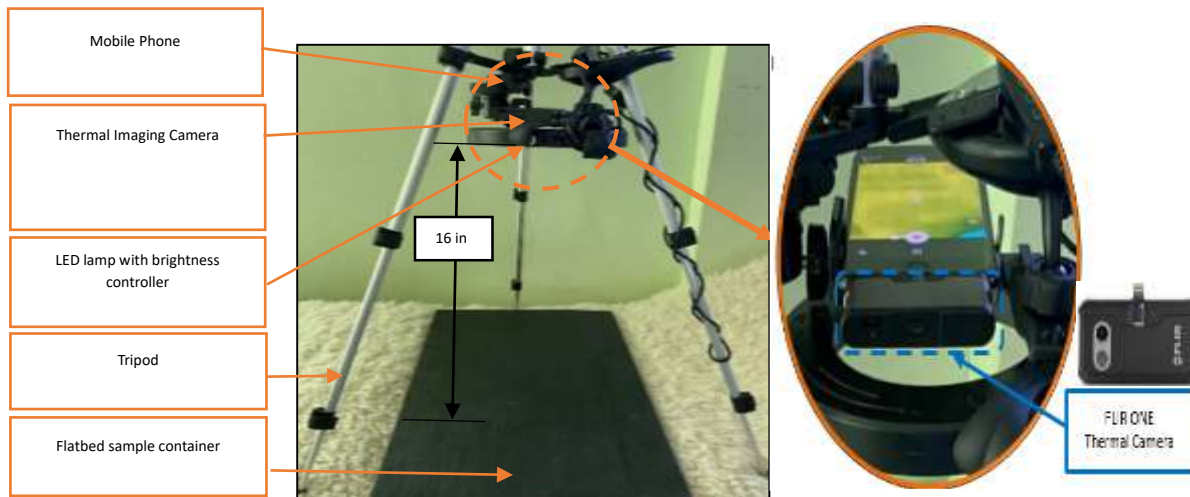


Figure 3. Experimental Setup

Figure 3. shows the experimental setup, which includes choosing an appropriate camera, making sure the lighting is right, and making sure the mounting is secure. Image acquisition entails gathering a variety of images and, if necessary, calibrating the camera. Processing is done using software and techniques like MATLAB, Python, and FLIR Thermal Studio. Preprocessing, setting parameters, and forming a control group are all included in the experiment design. Implementation requires code and handling of errors. Results are measured against predetermined parameters during performance review. Depending on the results, iteration and optimization may be carried out.

D. Image Acquisition

Infrared thermal images of the rough rice samples will be captured at regular intervals using FLIR One thermal camera. Multiple images will be captured to cover the entire sample area. This will be done to provide the raw thermal image additional raw data, resulting in a better vision as RGB scaled images. At least 1500 images for each rough rice sample were captured. The samples are obtained with a sampling distance of around 16 inches. Adjustable LED Ring Light (5 Watts to 150 Watts) was used to accurately light the rough rice samples and eliminate harsh shadows. The angle between the thermal imaging camera and the axis of the illumination source is kept at about 45 degrees. The thermal imaging camera is mounted on a modified tripod as illustrated in figure 2 to provide a rigid and stable support as well as simple vertical mobility.

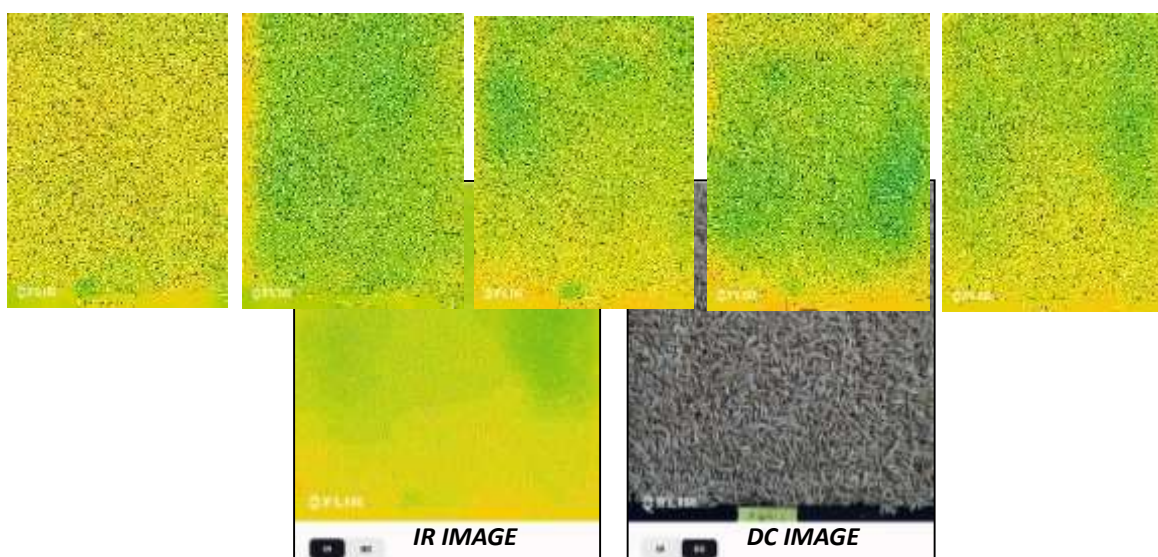


Figure 4. Infrared image acquired from FLIR ONE thermal camera.

Analysis of Rough Rice Moisture Content through Infrared Thermography (IRT)

E. Moisture Content

Many properties of rough rice are greatly affected by moisture content (MC). The amount of water in the rough rice divided by the oven-dry mass is known as oven-dry basis MC, and it is widely employed in the agriculture sector. But there are other ways to measure MC besides the oven-dry method.

Using the extracted information from a IR image of the rough rice, we can measure the MC of the sample using the relative humidity and temperature. Rough rice sample will ultimately achieve moisture equilibrium with the experiment based on the temperature and relative humidity. Using FLIR Thermal Studio Software, temperature and relative humidity were measured.

Equilibrium Moisture Content (EMC), can be calculated using the equation below. The relative humidity (h) is expressed in decimals in the equation below (e.g., 0.70 instead of 70%), and T is the temperature (in degrees Fahrenheit).

$$W = 330 + 0.452T + 0.00415T^2 \quad (1)$$

$$K = 0.791 + 0.000463T - 0.000000844T^2 \quad (2)$$

$$K_1 = 6.34 + 0.000775T - 0.0000935T^2 \quad (3)$$

$$K_2 = 1.09 + 0.084T - 0.0000904T^2 \quad (4)$$

Where T is the dry-bulb temperature ($^{\circ}F$). Thus, given two pieces of information, dry-bulb (or ambient) temperature and the RH, the EMC can be readily calculated.

$$EMC(\%) = \frac{1800}{W} \left[\frac{Kh}{1-Kh} + \frac{K_1Kh+2K_1K_2K^2h^2}{1+K_1Kh+K_1K_2K^2h^2} \right] \quad (5)$$

Where EMC is the equilibrium moisture content (%), h is the relative humidity expressed in decimal form (% / 100), and W , K , K_1 , and K_2 are coefficients defined by Eqs. 1 through 4, respectively [12]

F. Data Analysis

The acquired images will be processed using FLIR Thermal Studio a software to extract thermal data, such as temperature distribution, humidity and thermal patterns. Correlations will be established between the obtained thermal data and the corresponding moisture content of the samples.

After determining the moisture content of the rough rice. A confusion matrix is a table that is often used to describe the performance of a classification model (or "classifier") on a set of test data for which the true values are known. It allows the visualization of the performance of an algorithm. It allows easy identification of confusion between classes [13]. The *Confusionmat* function, one of the useful Matlab functions, was utilized by the researcher [14]. The accuracy of the model can be easily calculated using the confusion matrix.

		Actual Values	
		Positive (1)	Negative (0)
Predicted Values	Positive (1)	TP	FP
	Negative (0)	FN	TN

The formula for calculating accuracy is:

$$Accuracy = \frac{TP+TN}{TP+TN+FP+FN} \quad (6)$$

Analysis of Rough Rice Moisture Content through Infrared Thermography (IRT)

III. RESULTS AND DISCUSSION

The results obtained from the study will be presented and discussed, highlighting the potential of IRT for moisture content evaluation in rough rice.

FLIR Thermal Studio Report

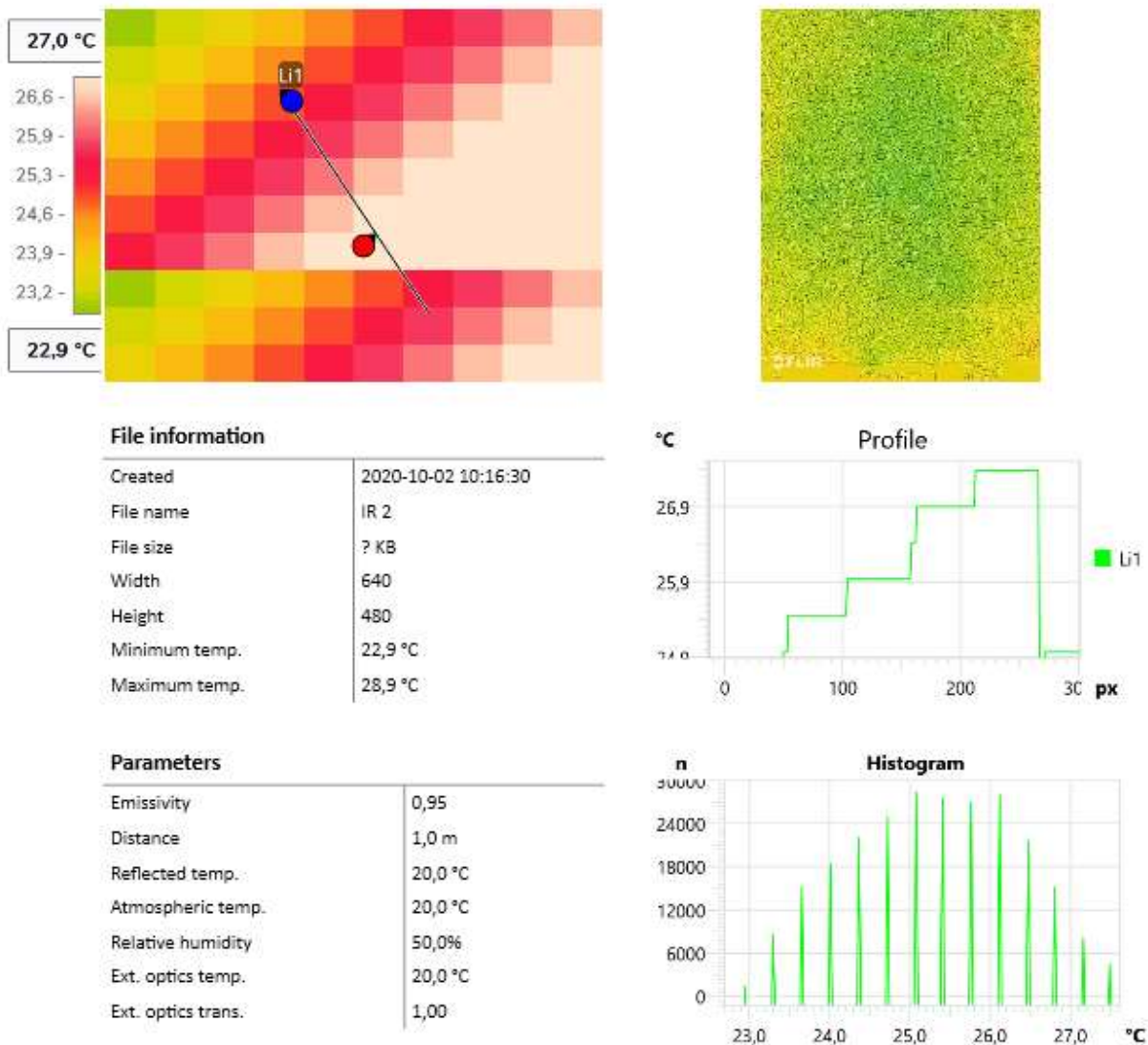


Figure 5. Generated report from FLIR Thermal Studio

As can be seen in figure 5, it illustrates a report generated through FLIR Thermal Studio software, which identifies the relative humidity and temperature extracted from the thermal image to determine the required parameter to measure the moisture content of rough rice. It also shows a graphical representation using a histogram graph. Figure 5 shows that the sample has a maximum temperature of 28.9 and a humidity level of 50.

Analysis of Rough Rice Moisture Content through Infrared Thermography (IRT)

Moisture content

CONFUSION MATRIX

LEGEND:

A = 20.9%, B = 15.23%, C = 14.57%, D = 13.91%, E = 12.63%

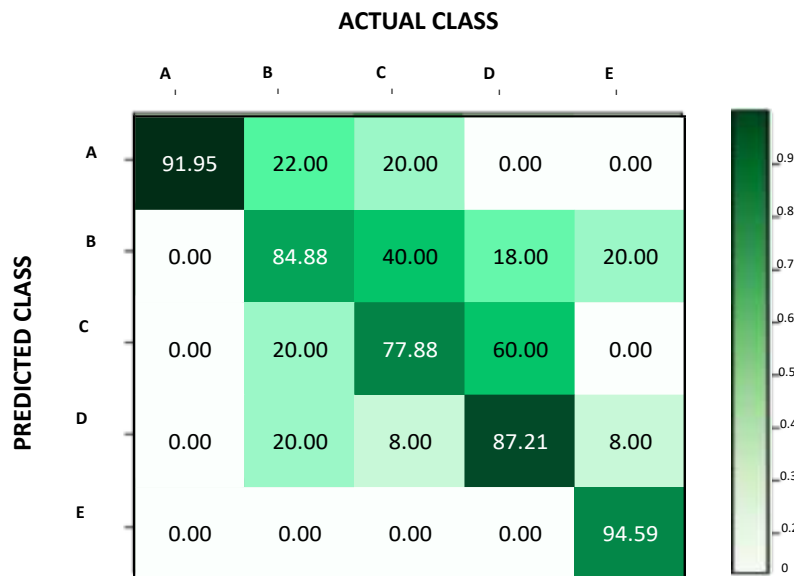


Figure 6. The confusion matrix for moisture content detection with accuracy rate of 87.30%.

The diagonal components represent the predicted observations, as seen in Figure 6. A total of 2,202 observations out of 2,238 were predicted correctly. Therefore, the overall accuracy is 87.30%. The accuracy rate for classification for Class E - 12.63%MC was highest (94.59%), followed by Class A - 20.29%MC (91.95%), Class D - 14.57, and Class B - 17.52 (87.21% and 84.88%, respectively). Nevertheless, with a classification accuracy rate of 77.88%, Class C-15.23 appeared to have the lowest rate. Keeping the Class C-15.23 expected outcomes in mind will help the model perform effectively. With the probable exception of the sample, the classifier misclassified 80 samples in total from Class C-15.23, which is the greatest misclassification rate of any class. This indicates that 77.88% of predictions for Class C-15.23 were correct.

Impedance and near-infrared spectroscopy's effectiveness at determining out rough rice's moisture content was examined in one study. The findings showed the exceptional precision of both approaches, with near-infrared spectroscopy having a significantly higher accuracy (0.55% error) than impedance (0.79% error) [15],[16].

IV. CONCLUSION

In accordance to the study's results, an image processing technique that measures the average rough rice pixel can be used for determining the moisture content of rough rice. The moisture content measurement can be determined scientifically making use of the Equilibrium Moisture Content (EMC) to predict the moisture content of the rough rice by examining the presence of relative humidity and temperature from the IR image and process using FLIR thermal studio.

The accuracy rate of detecting moisture content using the thermal imaging algorithm has an average success rate of 87.30%. The results of this study indicate that using infrared thermography, it may be possible to determine the moisture content of rough rice. It is recommended to develop new methods for image enhancement, feature extraction, machine learning, dataset creation, and real-time rough rice classification systems in order to help ensure that the quality of rice meets the necessary standards. Research on the application of this technology can, however, be done in the future.

The study's outcomes will contribute to improving quality control measures in the rice industry, enabling more efficient handling, processing, and storage practices. The improvement of rice classification accuracy and efficiency, which is essential for guaranteeing food security and meeting the increasing demand for high-quality rice, will also be highlighted along with future research directions and potential applications of IRT in agricultural moisture content evaluation.

REFERENCES

- 1) Bejarin, O.L., Fajardo, A.C. (2023). Rough Rice Grading in the Philippines Using Infrared Thermography. Computer and

Analysis of Rough Rice Moisture Content through Infrared Thermography (IRT)

Communication Engineering. CCCE 2023. Communications in Computer and Information Science, vol 1823. Springer, Cham. https://doi.org/10.1007/978-3-031-35299-7_2

- 2) Tallada, J. G. (2019). Precision Agriculture for Rice Production in the Philippines. FFTC Agricultural Policy Platform.
- 3) Prihasty, W., Nasution, A. M. T., & Isnaeni. (2020). Rice Grain Quality Determination Using FTIR Spectroscopy Method. 2020 IEEE 8th International Conference on Photonics (ICP). doi:10.1109/icp46580.2020.9206464
- 4) Heman A, Hsieh C-L, Measurement of Moisture Content for Rough Rice by Visible and Near-Infrared (NIR) Spectroscopy, Engineering in Agriculture, Environment and Food (2016), doi: 10.1016/j.eaef.2016.02.002.
- 5) TIMBERAID.com, Wood Moisture Content. Retrieved from <https://www.timberaid.com/calculator/fundamental/moisturecontent> (accessed May 11, 2020).
- 6) Bejo, S. K., & Jamil, N. (2016). Paddy grading using thermal imaging technology. International Food Research Journal, 23, 245–248.
- 7) Jain, N. K., Khanna, S. O., & Jain, K. R. (2014). Development of a classification system for quality evaluation of Oryza Sativa L. (Rice) using computer vision. Proceedings - 2014 4th International Conference on Communication Systems and Network Technologies, CSNT 2014, 1088–1092. <https://doi.org/10.1109/CSNT.2014.222>
- 8) Mahale, B., & Korde, P. S. (2014). Rice Quality Analysis Using Image Processing Techniques. International Conference for Convergence of Technology, 1–5.
- 9) Silva CS, Sonnadara U (2013) "Classification of rice grains using neural networks". In: Proceedings of Technical Sessions, Sri Lanka, September 2013. pp 9-14
- 10) Mousavirad, Seyed Jaleddin & Akhlaghian Tab, Fardin & Mollazade, Kaveh. (2012). Design of an Expert System for Rice Kernel Identification using Optimal Morphological Features and Back Propagation Neural Network. International Journal of Applied Information Systems. 3. 33-37.
- 11) TELEDYNE FLIR. What is MSX? Retrieved from <https://www.flir.asia/discover/professional-tools/what-is-msx/> (accessed June 05, 2020).
- 12) Mitchell, P. (2018). "Calculating the equilibrium moisture content for wood based on humidity measurements," BioRes. 13(1), 171-175. DOI: 10.15376/biores.13.1.171-175
- 13) knowledgebank.irri.org. How to determine the EMC. <http://www.knowledgebank.irri.org/step-by-step-production/postharvest/drying/drying-basics/how-to-determine-the-emc>. (Accessed March 15, 2020).
- 14) Arora, Vishal, Confusion matrix. Retrieved from https://rstudio-pubs-static.s3.amazonaws.com/559365_9d524b0feb814087a2b4db7ba41df323.html. (Accessed March 15, 2020).
- 15) K. Muthukaruppan, S. Thirugnanam, R. Nagarajan, M. Rizon, S. Yaacob, M. Muthukumaran, and T. Ramachandran, "A Comparison of South East Asian Face Emotion Classification Based on Optimized Ellipse Data Using Clustering Technique," Journal of Image and Graphics, Vol. 3, No. 1, pp. 1-5, June 2015. doi: 10.18178/joig.3.1.1-5
- 16) Zhou, Y., Chen, H., Zhang, X., Li, Z., & Zhang, Y. (2020). Comparative study on determination of moisture content in rough rice using near infrared spectroscopy and impedance. Food Analytical Methods, 13(6), 1416-1424.



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Influence of Fundamentals on Firm Value With Corporate Social Responsibility as a Moderating Variable in Consumer Goods Companies Listed on the Indonesian Stock Exchange



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ABSTRACT: This study aims to determine whether profitability and liquidity with CSR as a moderating variable affect consumer goods companies listed on the IDX in 2019-2021. The population of this study are consumer goods companies listed on the IDX in 2019-2021 totaling 79 companies. The sampling technique used purposive sampling method with a total of 38 observations that met the research sample criteria. The analysis method used is moderation regression analysis with the SPSS (Statistical Package For The Social Sciences) application tool. The results of this study indicate that liquidity and profitability has a positive effect on firm value. CSR has a positive effect in moderating the relationship between liquidity and firm value. Meanwhile, CSR has a negative effect in moderating the relationship between profitability and firm value.

KEYWORDS: Consumer Goods, Corporate Social Responsibility, Firm Value, Liquidity, Profitability

INTRODUCTION

Yuniningsih et al. (2019) explain that every company in the world is formed with its own objectives. Broadly speaking, the purpose of forming a company is divided into two, namely short-term goals with the intention of making a profit maximally and the long-term goal is an ever-increasing company value. A high share price will also make the company value high, so that it can maximize the prosperity of shareholders which is marked by a high return on investment. Therefore, increasing high company value is a long-term goal that a company should achieve. Because investors' assessment of a company can be observed through the movement of the company's share price traded on the stock exchange for companies that have gone public (Pristianingrum, 2017).

The development of Consumer Goods companies in Indonesia is predicted to get better in 2023. Reporting from *kompas.com*, Consumer Goods sector companies have been mentioned as the first sector that is predicted to survive the recession in 2023 followed by the health sector and shipping expeditions afterwards. In addition, *investor.id* also explained that consumer goods stocks will be the sector with the highest interest in trading in 2023. Researchers estimate that the number of investors who are interested in investing their shares in consumer goods companies can lead to an increase in the value of consumer goods company shares in 2023.

The following is the movement of the consumer goods sector stock price index in Indonesia for 3 consecutive years starting from 2019 to 2021.

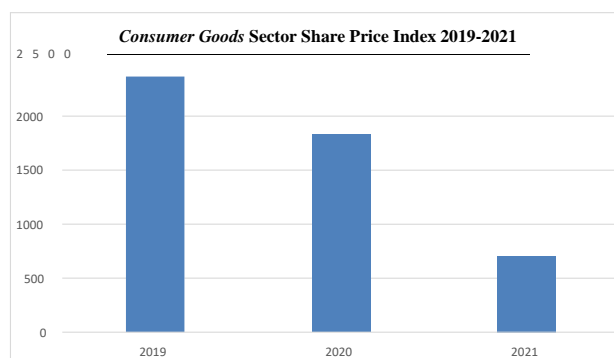


Figure 1.1 Consumer goods Stock Price Index 2018-2021

Source: IDX, 2023 (data processed)

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Based on figure 1.1, it can be seen that the share price value of the consumer goods sector tends to experience a significant decline from 2019-2021. The highest stock price index occurred in 2019 at 2366.3, followed by a decline in 2020 to reach 1828.4 and decreasing until the lowest price index occurred in 2021 at 704.8 (BPS, 2023).

Consumer Goods companies also have a large contribution to environmental pollution as a result of production waste, so it is expected that the disclosure of Corporate social responsibility (CSR) will be wider. Reporting from KlikJatim.com, plastic FMCG (Fast Moving Consumer Goods) goods still dominate plastic waste in Gresik. Single-use plastic packaging from consumer goods continues to accumulate in household trash cans. Even the disposable plastic packaging is currently still being used by the community, because its contents are daily necessities.

Iman et al. (2021) explain that high liquidity in the company will have an impact on the company's ability to meet its short-term obligations, which will have a positive impact on firm value. This is in accordance with the results of research conducted by Uli et al (2020) showing that the liquidity variable has a positive effect on firm value. However, this is contrary to research conducted by Saputri & Giovanni (2021) and Permana & Rahyuda (2019) where they concluded that liquidity has a significant negative effect on firm value. Saputri & Giovanni (2021) explain that liquidity that is too high can also hamper the company's ability to generate profits due to the large amount of idle cash, thereby reducing the company's productivity in generating profits.

Profitability is a ratio that can represent the company's financial performance, where increasing company profitability will increase the return that investors will get (Iman et al., 2021). This opinion is supported by research conducted by Jihadi et al (2021) showing that profitability has a positive effect on firm value. However, this contradicts research conducted by Marisa et al (2022) and Wijaya (2021) which state that profitability has no effect on firm value. Rizki et al. (2018) explain that profit fluctuations can cause investors to have no certainty regarding the benefits that will be obtained in the future, so that it can be one of the reasons for the insignificant effect of profitability on firm value.

CSR has an influence in moderating the relationship between liquidity and firm value. In accordance with the opinion of Penman (2013) which explains that when the liquidity ratio increases, the turnover of operational activities decreases. Likewise with cash and cash equivalents accounts, when cash gets bigger, investment in operational working capital decreases, and has an impact on reducing operational activities. This has an impact on poor profitability and will further reduce the value of the company. However, Nuswandari et al (2018) and Mariani et al (2016) show different research results, because according to them CSR disclosure is intended for long-term investment, but Indonesian investors tend to be daily traders where they are more interested in daily capital gains on stock sales so that the impact of CSR activities carried out by companies is not the focus of investors.

In addition, research on the ability of CSR to moderate the relationship between profitability and firm value also has mixed results. Rahma & Munfaqiroh (2021) explain that this CSR program can produce significant benefits in the form of company reputation so that it has an influence on increasing company value. This opinion is supported by the results of research conducted by Nuswandari et al. (2018) which results in research that CSR can moderate the effect of profitability on firm value. However, these results contradict research conducted by Imanu (2020) and Rachman & Priyadi (2022) explaining that CSR cannot moderate the relationship between profitability and firm value. this is because investors only assess the company's profit level. Investors consider that corporate social responsibility activities will reduce profits because there will be costs incurred due to these activities, resulting in a decrease in company value.

Therefore, with the above phenomenon, the authors are motivated to examine the value of companies in the consumer goods sector. This study aims to find empirical evidence of the effect of liquidity and profitability on firm value with corporate social responsibility as a moderating variable.

STUDY OF THEORY AND HYPOTHESES

Stakeholder Theory

The word "stakeholder" first appeared in an internal memorandum at Stanford Research Institute in 1963. The word is intended to oppose the stockholders' theory that shareholders are the only group to whom management needs to be accountable (Parmar et al., 2010). According to Efendi et al. (2022) stakeholder theory reveals that a company operates not only for its own sake but must be useful for stakeholders such as shareholders, lenders, suppliers, and other parties. In accordance with stakeholder theory, synergy and a strong reciprocal relationship between the company and the community, investors, and employees are needed.

Firm Value

Syahrani & Nur (2022) explain that company value is a fee that the company is willing to pay by potential consumers if the company is sold. This opinion is supported by Yanti & Darmayanti (2019) who state that company value is the price that potential buyers are willing to pay if the company is sold. Firm value will be used as a measure of the success of a company's management

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so that it can increase trust for shareholders and the fulfillment of the welfare of shareholders reflects the high value of the company. A high company value will make an investor's trust in the company increase.

Liquidity

According to Hery (2019) liquidity is the company's ability to fulfill obligations or pay its short-term debt. In other words, the liquidity ratio is a ratio that can be used to measure the level of the company's ability to pay off its short-term obligations that will be due. If the company has the ability to pay off its short-term obligations when due, the company is a liquid company and vice versa.

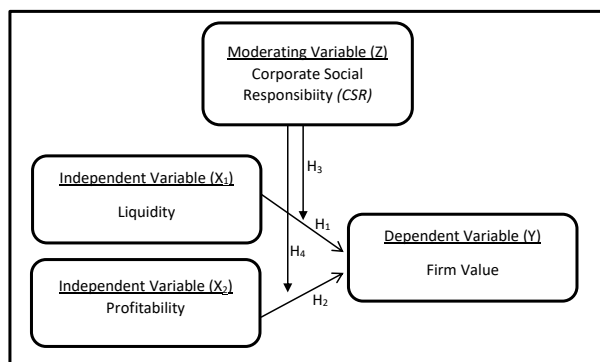
Profitability

Profitability is the company's ability to use working capital to profit, so that the company has no difficulty in returning its debts, both short-term debt and long-term debt, as well as paying dividends to investors who invest in the company (Harun & Jeandry, 2018). Saputri & Giovanni (2021) explain that the performance of a company can be assessed from the company's ability to generate profits, because in the company profitability is used as an assessment of the effectiveness of its management.

Corporate social responsibility (CSR)

According to The World Business Council for Sustainable Development (WBCSD), social responsibility is the responsibility of companies for the impact of their various decisions and activities on society and the environment through an open and ethical behavior, which is consistent with sustainable development and community welfare, pays attention to the expectations of stakeholders, complies with applicable laws and is committed to international norms of behavior and is integrated into all parts of the organization (Puspaningrum, 2017).

RESEARCH MODEL



Hypothesis

H1: Liquidity has a positive effect on firm value

H2: Profitability has a positive effect on firm value

H3: Corporate Social Responsibility (CSR) which moderates liquidity has a positive effect on firm value

H4: Corporate Social Responsibility (CSR) which moderates profitability has a positive effect on firm value.

RESEARCH METHODS

Sampling Method

Research using a quantitative approach that emphasizes causality and moderation aims to test the relationship between phenomena and variables in this study. The population in this study took consumer goods companies that are still active on the Indonesia Stock Exchange with a period of 2018-2021 and 79 companies were obtained as the research population. In selecting the research sample, the purposive sampling method was used by considering certain criteria and data limitations during the observation period, so 38 companies were obtained that could be used as research samples.

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Table 1. Moderated Regression Analysis (MRA) Test Results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.222	1.677		.132	.895
	CR	1.935	.917	2.469	2.111	.038
	ROA	11.095	3.077	3.177	3.170	.002
	CSR	1.013	1.909	.106	.530	.597
	CR_CSR	2.173	1.043	2.608	2.083	.040
	ROA_CSR	-19.795	6.031	-3.799	-3.780	.000

a. Dependent Variable: Q

Table 1 explains the research model, namely: $Tobin's\ Q = 0.222 + 1.935\ CR + 11.095\ ROA + 1.013\ CSR + 2.173\ CR_CSR + (-19.795)\ ROA_CSR$

Classic Assumption Test Results

Table 2. Normality Test Result

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		92
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.43718441
Most Extreme Differences	Absolute	.122
	Positive	.060
	Negative	-.122
Test Statistic		.122
Asymp. Sig. (2-tailed)		.118 ^c
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

In the table, it can be seen that the results of the normality test using the One Sample Kolmogorov-Smirnov method show an Asymp. Sig (2-tailed) of 0.285, or greater than the significance value of 0.05 (statistical confidence level of 95%) so that the data in the regression model of this study is declared normally distributed.

Table 3. Multicollinearity Test Results

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	CR	.752	1.329
	ROA	.738	1.355
	CSR	.807	1.239

a. Dependent Variable: Q

From the multicollinearity test table above, it can be seen that the tolerance and VIF values in the collinearity statistics column show a value that meets the requirements for data declared there is no correlation between the independent variables, namely (CR, ROE, and CSR). This happens because the tolerance value is ≥ 0.10 and the VIF value is ≤ 10 , so the data is declared free of multicollinearity symptoms.

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Table 4. Heteroscedasticity Test Results

			Correlations						
			CR	ROA	CSR	CR_CSF	ROA_CSF	ABS_RES	
Spearman's rho	CR	Correlation	1.000	.300**	.147	.981**	.311**	.148	
		Coefficient Sig. (2-tailed)	.	.004	.161	.000	.003	.158	
		N	92	92	92	92	92	92	
	ROA	Correlation	.300**	1.000	-.352*	.223*	.998**	.027	
		Coefficient Sig. (2-tailed)	.004	.	.001	.032	.000	.801	
		N	92	92	92	92	92	92	
	CSR	Correlation	.147	-.352**	1.000	.303**	-.313**	-.182	
		Coefficient Sig. (2-tailed)	.161	.001	.	.003	.002	.082	
		N	92	92	92	92	92	92	
	CR_CSF	Correlation	.981**	.223*	.303**	1.000	.241*	.134	
		Coefficient Sig. (2-tailed)	.000	.032	.003	.	.021	.202	
		N	92	92	92	92	92	92	
	ROA_CSF	Correlation	.311**	.998**	-.313*	.241*	1.000	.017	
		Coefficient Sig. (2-tailed)	.003	.000	.002	.021	.	.870	
		N	92	92	92	92	92	92	
	ABS_RES	Correlation	.148	.027	-.182	.134	.017	1.000	
		Coefficient Sig. (2-tailed)	.158	.801	.082	.202	.870	.	
		N	92	92	92	92	92	92	
	**. Correlation is significant at the 0.01 level (2-tailed).								
	*. Correlation is significant at the 0.05 level (2-tailed).								

Based on the results of the correlation between absolute residuals and independent variables, it shows that the independent variables, namely CR, ROA, CSR, CR_CSF and ROA_CSF, show no significant correlation with absolute residuals. The sig. value is greater than 0.05 or non-significant so that it is declared free of heteroscedasticity.

Table 5. Coefficient of determination test results

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.713 ^a	.508	.479	.416236	1.926
a. Predictors: (Constant), ROA_CSF, CSR, CR, ROA, CR_CSF					
b. Dependent Variable: Q					

In the table of the test results of the coefficient of determination, it can be seen that the value (R²) is 0.508, which means that 50.8% of the variation in firm value (Q) can be explained by the variation of the four independent variables, namely X1 (CR), X2 (ROA), Z (CSR), CR_CSF (CR interaction with CSR), and ROA_CSF (ROA interaction with CSR). While the remaining 49.92% is explained by other variables that are not included in the research model.

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Table 6. Simultaneous Test Results F

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.376	5	3.075	17.750	.000 ^b
	Residual	14.900	86	.173		
	Total	30.276	91			
a. Dependent Variable: Q						
b. Predictors: (Constant), CR, ROA, CSR, CR_CSR, ROA_CSR						

Based on the test results with the simultaneous test (F), table 4.12 shows the significance value Sig. = 0.000 < 0.05 so it can be concluded that the variables X1 (CR), X2 (ROA), Z (CSR), 1 (CSR interaction with CR), and 2 (CSR interaction with ROA), together or simultaneously have a significant effect on firm value (Tobin's Q) consumer goods sector listed on the Indonesia Stock Exchange

Table 7. Partial Test Results (t)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.222	1.677		.132	.895
	CR	1.935	.917	2.469	2.111	.038
	ROA	11.095	3.077	3.177	3.170	.002
	CSR	1.013	1.909	.106	.530	.597
	CR_CSR	2.173	1.043	2.608	2.083	.040
	ROA_CSR	-19.795	6.031	-3.799	-3.780	.000
a. Dependent Variable: Q						

Based on the partial test results (t) in table 7 above, the hypothesis test can be explained as follows:

First hypothesis testing

Liquidity (CR) has a positive effect on firm value (Tobin's Q) in consumer goods sector companies listed on the Indonesia Stock Exchange can be accepted, with the results of the coefficient value of 0.222 and a significance level of 0.038 < 0.05 declared significant positive.

Second hypothesis testing

Profitability (ROA) has a positive effect on firm value (Tobin's Q) in consumer goods sector companies listed on the Indonesia Stock Exchange can be accepted, with the results of the coefficient value of 11.095 and a significance level of 0.002 < 0.05, which is stated to be significantly positive.

Third hypothesis testing

Corporate social responsibility (CSR) can moderate the effect of liquidity on firm value in consumer goods sector companies listed on the Indonesia Stock Exchange can be accepted, with the results of the coefficient value of 2.173 and a significance level of 0.040 < 0.05 stated as significantly positive.

Fourth hypothesis testing

Corporate social responsibility (CSR) can moderate the relationship between profitability and firm value in consumer goods sector companies listed on the Indonesia Stock Exchange cannot be accepted, with the results of the coefficient value of -19.795 and a significance level of 0.000 > 0.05, so it is declared significantly negative.

DISCUSSION OF RESEARCH RESULTS

Effect of Liquidity on Firm Value

Based on the results of hypothesis testing, it can be seen that Liquidity (CR) has a positive and significant effect on firm value (Tobin's Q). The results of this study are in line with research by Iman et al (2021) and Damayanti et al (2022) showing that the liquidity variable has a positive and significant effect on firm value. Iman et al (2021) explain that the company's high cash

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capability will have an impact on the company's ability to meet its short-term obligations, which will have a positive impact on firm value. Therefore, the higher the liquidity value, the higher the firm value and the lower the liquidity, the lower the firm value.

Effect of Profitability on Firm Value

Based on the results of hypothesis testing, it can be seen that profitability (ROA) has a positive and significant effect on firm value (Tobin's Q). The results of this study are in line with the research of Saputri and Giovanni (2021) and Damayanti (2021) which results in profitability having a significant positive effect on firm value. The increasing profitability of a company will also increase its company value because increasing profitability shows that the company's performance is improving and it can be estimated that the company's future prospects are good so that it can attract investors and increase the company's share price which will reflect the increasing value of the company.

Corporate Social Responsibility can Moderate the Effect of Liquidity on Firm Value

Based on the results of hypothesis testing, it can be seen that liquidity (CR) moderated by CSR has a positive and significant effect on firm value (Tobin's Q). The results of this study are in line with the research of Rahma & Munfaqiroh (2021) and Rachman (2022) corporate social responsibility (CSR) as a moderating variable and strengthen the effect of liquidity on firm value. This means that with an increase in the company's high moral responsibility both towards employees in the company itself (internal) and outside the company environment (external), the company's value will increase. If managed properly, this CSR or corporate social responsibility program can produce significant benefits in the form of corporate reputation so that it has an influence on increasing company value.

Corporate Social Responsibility (CSR) can Moderate the Relationship Between Profitability and Firm Value

Based on the results of hypothesis testing, it can be seen that profitability (ROA) moderated by corporate social responsibility has a negative and significant effect on firm value (Tobin's Q). This is in line with the research of Rachman (2022) and Mariani (2016) where profitability moderated by corporate social responsibility has a negative and significant effect on firm value. This indicates that if the profitability value moderated by corporate social responsibility is higher, the company value will decrease. This is because investors only assess the company's profit level. Investors consider that corporate social responsibility activities will reduce profits because there will be costs incurred due to these activities, resulting in a decrease in company value. The results of this study are in accordance with the perspective of stakeholder theory which reveals that companies must fulfill all the wants and needs of stakeholders so that the company can survive in the long term. This has an impact on potential investors who will not be interested in investing in the company, so that social responsibility activities moderated by profitability do not have a significant influence on the increase in firm value.

CONCLUSION

Based on the tests that have been carried out, it can be concluded that liquidity affects firm value because liquidity describes the company's ability to pay short-term obligations so that the higher the level of liquidity will create a good response by investors. b. Profitability affects firm value because the level of profitability reflects the company's performance, the higher the level of net profit, the higher the profit distribution that will be received by investors. c. Liquidity moderated by CSR affects firm value. When the company allocates its liquidity to carry out CSR, the company will improve its reputation in the eyes of investors so that it has an influence on increasing the company's value. d. Liquidity moderated by corporate social responsibility has an effect on firm value. Profitability moderated by corporate social responsibility affects firm value because CSR can reduce the net profit owned by the company so that it can reduce the profit sharing that investors will get.

SUGGESTION

Investors and company management are expected to pay more attention to liquidity, profitability, and the company's CSR level which has an impact on firm value. This is because based on the results of the study stated that liquidity, profitability, and the level of corporate CSR affect the company's value.

Based on the above conclusions, it is recommended that several suggestions be considered by researchers in further research, the recommended suggestion is that further researchers are expected to add independent variables other proxies such as leverage, earnings growth, and dividend policy. Future researchers can use different proxy to get more accurate results. For example, such as using cash ratio in measuring liquidity, ROE in measuring profitability, and using PBV in measuring firm value. Future researchers are expected to expand the research sample both from other company sectors such as the manufacturing and banking sectors and the observation time range to 5 years in order to get more significant research results.

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REFERENCES

- 1) Efendi, A. M., Yuniningsih, & Wikartika, I. (2022). Analisis Pertumbuhan Laba dengan Ukuran Perusahaan sebagai Variabel Moderasi pada Perusahaan Pertambangan yang Terdaftar Di Bursa Efek Indonesia. *Jurnal Ilmiah Universitas Batanghari Jambi*, 22(3), 1549-1555.
- 2) Iman, C., Sari, F. N., & Pujiati, N. (2021). Pengaruh Likuiditas dan Profitabilitas Terhadap Nilai Perusahaan. *Perspektif: Jurnal Ekonomi & Manajemen Universitas Bina Sarana Informatika Volume 19 No. 2*, 191-198.
- 3) Marisa, C., Andriana, I., & Thamrin, K. M. (2022). Pengaruh Kebijakan Dividen, Profitabilitas dan Ukuran Perusahaan terhadap Nilai Perusahaan pada Perusahaan Sub Sektor Perkebunan yang Terdaftar di Bursa Efek Indonesia. *Al-Kharaj: Jurnal Ekonomi, Keuangan & Bisnis Syariah Volume 4 No 6*, 1615-1627.
- 4) Kurniasari, J., & Anna, Y. D. (2019). Pengaruh Pengungkapan *Corporate social responsibility* (Csr) Terhadap Nilai Perusahaan dengan Profitabilitas dan Ukuran Perusahaan sebagai Variabel Moderating. *Jurnal Riset Akuntansi dan Perbankan Volume 13 Nomor 2*, 149 - 167.
- 5) Marisa, C., Andriana, I., & Thamrin, K. M. (2022). Pengaruh Kebijakan Dividen, Profitabilitas dan Ukuran Perusahaan terhadap Nilai Perusahaan pada Perusahaan Sub Sektor Perkebunan yang Terdaftar di Bursa Efek Indonesia. *Al-Kharaj: Jurnal Ekonomi, Keuangan & Bisnis Syariah Volume 4 No 6*, 1615-1627.
- 6) Nuswandari, C., Sunarto, S., & Jannah, A. (2019). *Corporate social responsibility* Moderated the Effect of Liquidity and Profitability on the Firm Value. *Advances in Economics, Business and Management Research, volume 86*, 87-90.
- 7) Rizki, Z. W. (2018). Firm Value : a Study of Property and Real Estate Companies Listed. *Eurasia: Economics & Business, 2(8)*, 34-41.
- 8) Penman, H. (2013). *Financial Analysis Statement and Security Valuation Fifth Edition*. New York: Mc Graw Hill.
- 9) Pristianingrum, N. (2017). Pengaruh Ukuran, Profitabilitas, Dan Pengungkapan Csr Terhadap Nilai Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia. *Prosiding Seminar Nasional Dan Call For Paper Ekonomi Dan Bisnis (SNAPEREBIS 2017)*, 2017(1), 353–364.
- 10) Puspaningrum, Y. (2017). Pengaruh *Corporate social responsibility* dan Kepemilikan Manajerial Terhadap Nilai Perusahaan dengan Profitabilitas dan Ukuran Perusahaan Sebagai Variabel Moderating (Studi Empiris pada Perusahaan Pertambangan di Bursa Efek Indonesia). *Jurnal Profita Vol. 2*.
- 11) Rahma, A. N., & Munfaqiroh, S. (2021). Pengaruh Profitabilitas, Likuiditas, dan Leverage Terhadap Nilai Perusahaan dengan *Corporate social responsibility* (CSR) sebagai Variabel Moderasi. *Jurnal Manajemen Dirgantara, Vol. 14, No. 2*, 196-203.
- 12) Saputri, C. K., & Giovanni, A. (2021). Pengaruh Profitabilitas, Pertumbuhan Perusahaan dan Likuiditas terhadap Nilai Perusahaan. *Competence : Journal of Management Studies Vol 15, No 1*, 90-108.
- 13) Syaharani, A. F., & Nur, D. I. (2022). Analisis nilai perusahaan pada perusahaan sub sektor makanan dan minuman : bukti empiris di bursa efek indonesia. *Jurnal Manajemen Volume 12*, 111-123.
- 14) Yanti, I. G. (2019). Pengaruh Profitabilitas, Ukuran Perusahaan, Struktur Modal, Dan Likuiditas Terhadap Nilai Perusahaan Makanan Dan Minuman. *E-Jurnal Manajemen Universitas Udayana, 8(4)*, 2297.
- 15) Yuniningsih, Pertiwi, T. K., & Purwanto, E. (2019). Fundamental Factor of Financial Management in Determining Company Values. *Management Science Letters 9*, 205-216.

Evaluation of Physical, Sports, and Health Education Learning in State Senior High Schools at Mandailing Natal Regency After the Pandemic



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ABSTRACT: This study aims at finding the results of the evaluation of Physical, Sports, and Health Education Learning in state senior high schools at Mandailing Natal Regency after the Covid-19 pandemic. The evaluation model used in this study is the CIPP model. This research is an evaluation study that uses qualitative and quantitative methods. Research instrument used were observation and questionnaire. The research sites were in five state senior high schools at Mandailing Natal Regency, with five principals, five teachers, and 125 students as the research subjects. The data were analysed by using descriptive statistical techniques with percentage formulas. Evaluation results show that the evaluation of Physical, Sports, and Health Education Learning in state senior high schools at Mandailing Natal Regency after the Covid-19 Pandemic are in good category. Then, the results related to each aspect show that (1) Context Evaluation of Physical, Sports, and Health Education Learning is good. (2) Input Evaluation of Physical, Sports, and Health Education Learning in state senior high schools at Mandailing Natal Regency after the Covid-19 Pandemic is good. (3) Process Evaluation of Physical, Sports, and Health Education Learning in state senior high schools at Mandailing Natal Regency after the Covid-19 Pandemic is good. (4) Product Evaluation on Physical, Sports, and Health Education Learning in state senior high schools at Mandailing Natal Regency after the Covid-19 Pandemic is good.

KEYWORDS: evaluation, Physical, Sports, and Health Education learning, state senior high school

INTRODUCTION

The quality of education is currently experiencing challenges due to the outbreak of Corona Virus Disease 2019 (Covid-19). The Covid-19 pandemic has changed paradigms and created new directions in the education system in Indonesia, even in the world. Implementing education that was previously still conservative must now be willing to take place with a new model that certainly requires new implementation and management. Everyone is concerned that this condition will impact the effectiveness and efficiency of the education system during this pandemic. Covid-19 has become a global pandemic whose spread is really worrying. As a result, the government must work together to reduce the rate of the spread of the Covid-19 virus by issuing a policy for all citizens to conduct social distancing or maintain distance (Minister of Education and Culture Circular No. 4 of 2020).

Husamah (2015) generally states that face-to-face learning has various advantages for both lecturers/teachers and students, including 1. Formal discipline set on face-to-face learning can form mental discipline; 2. Facilitate the provision of reinforcement immediately; 3. Facilitate the assessment process by the instructor; 4. Become a tool for learning to interact with learners. Moreover, it is related to the ability to socialize between lecturers/teachers and students, as well as among friends. Furthermore, lecturers can directly observe the attitude and behavior of students in receiving materials. This opinion is an accurate picture that is a unique attraction for students to maintain learning with face-to-face mode.

Distance learning was done in a digital way for the integrity of human soul safety (Firman & Rahman, 2020; Sadikin & Hamidah, 2020; Risalah et al., 2020). Covid-19 is a virus that has annihilated and shocked the world (Muhyiddin, 2020). Learning was used to be done together in the same place, namely science transactions in actual conditions. In contrast, the Covid-19 pandemic problem shows that education has shifted to digital. The government explicitly stipulates Distance Learning (Mahidin, 2021). It is why the government simultaneously runs distance education actions (Abidin et al., 2020; Kencanawaty et al., 2020).

Online learning is a new way of teaching and learning that utilizes electronic devices, especially the internet, to deliver learning. Online learning entirely depends on internet network access. Hazaymeh (2021: 501); Muraveva (2020: 6) state that online learning is a form of conventional learning delivery poured into digital format via the internet. Online learning is considered the only medium of material delivery between teachers and students during the pandemic emergency period (Almazova et al., 2020, p. 368;

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Chansanam et al., 2021, p. 349). Various media can also be used to support the implementation of online learning. For example, virtual classes use Google Classroom, Edmodo, and Schoology services, and instant messaging applications such as WhatsApp (Nadeak, 2020: 1764; Reyes-Chua et al., 2020: 253; Huang et al., 2020: 3). Online learning can even be done through social media such as Facebook and Instagram (Kumar & Nanda, 2018: 3; Saho & Gupta, 2020: 163). Online learning makes learners communicate through a device intermediary, reducing interaction between one individual and others. The lack of such interaction coupled with restrictions on physical meetings makes students bored (Bano et al., 2019, p. 200; Nassoura, 2020: 1965; Sadykova & Meskill, 2019: 6; Marshall & Kostka, 2020: 2). One of the subjects affected by the Covid-19 pandemic was the learning of Physical, Sports and Health Education. Physical, Sports and Health Education is an educational process that utilizes physical activity to produce holistic changes in individual qualities in physical, mental, and emotional terms. Physical activity becomes the primary and dominant thing in physical education learning. In addition, another uniqueness of physical education is that it can improve students' physical fitness and health, improve the discovery of rich physical skills, and increase students' understanding of the principles of movement and how to apply them in practice (Quennerstedt, 2019: 2; Opstoel et al., 2020: 797; Bukhari et al., 2019: 215; Prontenko et al., 2020: 161).

Physical, Sports and Health Education is not only an essential part of human life. It is also an essential part of the educational process. It means that through well-directed physical education, students will develop skills that are useful for filling leisure time, engaging in activities that are conducive to developing healthy life, developing socially, and contributing to their physical and mental health (Razouki et al., 2021, p. 201). Physical activity is the primary and dominant thing in learning Physical, Sports and Health Education (Petrie et al., 2021, p. 103; Terekhina et al., 2021: 2272; Rud et al., 2019: 1630). Online learning has slowly begun to be abandoned and began to lead to the teaching and learning process that should be a face-to-face teaching and learning process between students and teachers. However, the learning process has not been thoroughly carried out; some also still use online media as material for teaching. Learning to pursue this face-to-face also takes time to adapt, especially Physical, Sports and Health Education learning in schools. So far, most Physical, Sports and Health Education teachers still struggle to provide teaching materials that meet Physical, Sports and Health Education learning well. Based on the survey results with three Physical, Sports and Health Education teachers at state senior high school at Mandailing Natal Regency, two teachers stated that students' ability which has not been optimal to meet and follow the learning process of Physical, Sports and Health Education becomes one of the obstacles in face-to-face or online learning. As a result, online learning must now lead to offline or face-to-face learning, and not all the material in the syllabus and lesson plan can be appropriately implemented. This material cannot be carried out for several reasons, such as the school that is lack of facilities and infrastructure. Physical, Sports and Health Education teachers only rely on the facilities and infrastructures in schools, some of which are unsuitable for use because they have suffered damage due to yesterday's pandemic. Physical, Sports and Health Education teachers are also not optimal in developing their creativity by modifying tools and facilities to support the teaching and learning process at school. So that teachers can only convey material in theory. Some parents and students have not been able to operate smartphones properly. There needs to be support from parents to meet the needs of students in participating in the online Physical, Sports and Health Education learning process. The implementation of Physical, Sports and Health Education learning must be adjusted to the abilities of each learner, and the implementation given must be systematic, following the characteristics of students, and managed through effective and efficient physical development towards the formation of a whole person. The obstacles experienced in learning Physical, Sports and Health Education after the Covid-19 pandemic can be minimized if teachers and schools implement good management. Bandi (2018: 3) states in the proceedings of the national seminar on education that learning management is an effort to organize or manage the teaching and learning process to be following the concepts and principles of teaching to achieve the teaching objectives effectively and efficiently. Rukajat's (2018: 5) opinion is that learning management is the ability of teachers (managers) to utilize existing resources through activities to create and develop cooperation so that learning is created between them to achieve the objectives of education in the classroom effectively and efficiently. Furthermore, Rukajat (2018:5) also mentions that the concept of management has two meanings, namely broad and narrow understanding. In a broad sense, learning management involves managing learning programs that start from planning, organizing, directing or controlling, and assessment. Learning management, in a narrow sense, is defined as activities that need to be managed by teachers during the interaction process with students in the implementation of learning. Online learning management is carried out to optimize the implementation of online learning systems in supporting the achievement of complete educational goals. The implementation of online learning management can be carried out using a learning management system. The learning management system is essential for developing curriculum design, student learning management, and student learning motivation (Nafiah & Hartatik, 2020). Evaluation is very closely related to the learning process. Evaluation is helpful as a way to obtain learning development and to find out how far the learning objectives that have been formulated are fulfilled. Correspondingly, the National Education Standards (SNP) 2013 reveals that evaluation is an effort to collect and process information

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in order to increase the effectiveness of implementation at the national, regional, and educational union levels. There are many evaluation models with their respective formats and systems. However, sometimes found in several of the same models as other evaluation models, one of which is the Context, Input, Process, Product (CIPP) evaluation model. This evaluation model was developed by a decision-oriented Stufflebeam (Birgili, 2021: 204; Finey, 2020: 27; Erdogan & Made, 2021: 2).

METHOD

This is an evaluation study that used quantitative and qualitative methods. Evaluation is a series of processes determining the extent to which goals can be achieved. Evaluation provides information for making decisions. Evaluation is also the process of finding formations about objects or subjects that are carried out to make decisions about those objects or subjects (Sukardi, 2015: 2-3). The sample is as part of the population taken using specific ways (Subakti et al., 2021: 71). The research sample is a small part taken from a member of the population, so it can be used to represent the population itself. Purposive sampling technique was used to determine sample. The sample criteria were: researchers took one physical, sports and health education teacher, one school principal, and students who were willing to become samples and fill out questionnaires from researchers.

No	School	School Principal	Teacher	Students
1	SMAN 1 Panyabungan	1	1	25
2	SMAN 2 Panyabungan	1	1	25
3	SMAN 3 Panyabungan	1	1	25
4	SMAN 1 Siabu	1	1	25
5	SMAN 1 Hutabargot	1	1	25
Total		5	5	125

DISCUSSION

Based on the results of the above research, some conclusions can be drawn, namely:

1. Context Evaluation

Based on the evaluation results of the context of Physical, Sports and Health Education learning at state senior high schools in Mandailing Natal Regency after the Covid-19 Pandemic, the statement of the principal is very good, the teachers' statement is very good, and the students' statement is good, it is concluded that the context evaluation on Physical, Sports and Health Education learning in state senior high schools at Mandailing Natal Regency after the Covid-19 Pandemic is good.

2. Input Evaluation

The results of the study on the evaluation of Physical, Sports and Health Education learning inputs at state senior high schools in Mandailing Natal Regency after the Covid-19 Pandemic show that the principals' statement is significant in very good category, the teachers' statement is good, and the students' statement also shows promising results, with the result that the evaluation of Physical, Sports and Health Education learning in state senior high school at Mandailing Natal Regency after the Covid-19 Pandemic is good.

3. Process Evaluation

The results show that in the evaluation of the Physical, Sports and Health Education learning process in state senior high school at Mandailing Natal Regency after the Covid-19 Pandemic based on statements from the principal mainly stated good, the teacher statement was good, the results of the students' statements were good, the results of the study concluded that the evaluation of the process on learning Physical, Sports and Health Education in state senior high school at Mandailing Natal Regency after the Covid-19 Pandemic is good.

4. Product Evaluation

The evaluation results of Physical, Sports and Health Education learning products in state senior high school at Mandailing Natal Regency after the Covid-19 Pandemic based on the principal's statement are good, the teacher's statement is good, and the statement from the students is good. It can be concluded that the product evaluation on Physical, Sports and Health Education learning in state senior high school at Mandailing Natal Regency after the Covid-19 Pandemic is good.

CONCLUSION

Success criteria evaluate each CIPP variable with three categories: good, fair, and weak. Evaluation results show that evaluation on Physical, Sports, and Health Education Learning in State Senior High School at Mandailing Natal Regency after the Covid-19 Pandemic is in a good category. Here are the results related to each aspect. (1) Context Evaluation of Physical, Sports, and Health

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Education Learning is good. (2) Input Evaluation of Physical, Sports, and Health Education Learning in State Senior High Schools at the Mandailing Natal Regency after the Covid-19 Pandemic is good. (3) Process Evaluation of Physical Education and Health Learning Process at State Senior High Schools throughout Mandailing Natal Regency after the Covid-19 Pandemic is good. (4) Product Evaluation on Physical and Health Education Learning at State Senior High Schools throughout Mandailing Natal Regency after the Covid-19 Pandemic is good.

REFERENCES

- 1) Almarzooq, Z. I., Lopes, M., & Kochar, A. (2020). Virtual learning during the covid-19 pandemic. *Journal of the American College of Cardiology*, 75(20), 2635–2638.
- 2) Bano, S., Cisheng, W., Khan, A. N., & Khan, N. A. (2019). WhatsApp use and student's psychological well-being: Role of social capital and social integration. *Children and Youth Services Review*, 103, 200-208.
- 3) Bukhari, K., Effendi, Z. M., & Jama, J. (2019, December). Physical education and health sports (pehs) learning model through investment group online in digital era. In *International Conference on Education Technology (ICoET 2019)* (pp. 215-219). Atlantis Press.
- 4) Chansanam, W., Tuamsuk, K., Poonpon, K., & Ngootip, T. (2021). Development of online learning platform for Thai university students. *International Journal of Information and Education Technology*, 11(8), 348-355.
- 5) Firman, F., & Rahayu, S. (2020). Pembelajaran online di tengah pandemi covid- 19. *Indonesian Journal of Educational Science (IJES)*, 2(2), 81-89.
- 6) Hazaymeh, W. A. (2021). EFL students' perceptions of online distance learning for enhancing english language learning during COVID- 19pandemic. *International Journal of Instruction*, 14(3), 501-518.
- 7) Huang, R. H., Liu, D. J., Tlili, A., Yang, J. F., & Wang, H. H. (2020). Handbook on facilitating flexible learning during educational disruption: The Chinese experience in maintaining undisrupted learning in COVID-19 outbreak. Beijing: Smart Learning Institute of Beijing Normal University, 1-54.
- 8) Husamah. (2015). *Pembelajaran Bauran (Blended Learning)*. Jakarta: Prestasi Pustaka.
- 9) Kumar, V., & Nanda, P. (2018). Social media in higher education. *International Journal of Information and Communication Technology Education*, 10(40).
- 10) Mahidin, M. (2021). Manajemen pembelajaran di masa pandemi covid 19 pada prodi BKPI FITK UIN Sumatera Utara Medan. *AL-IRSYAD*, 11(2), 236- 243.
- 11) Marshall, H. W., & Kostka, I. (2020). Fostering teaching presence through the synchronous online flipped learning approach. *Tesl-Ej*, 24(2), n2.
- 12) Martelaer, K. (2020). Personal and social development in physical education and sports: A review study. *European Physical Education Review*, 26(4), 797-813.
- 13) Muhyiddin, M. (2020). Covid-19, new normal, dan perencanaan pembangunan di Indonesia. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, 4(2), 240-252.
- 14) Muraveva, L. A. (2020). Distance learning: theory and practice. In *SHS Web of Conferences* (Vol. 79, p. 01011). EDP Sciences.
- 15) Nadeak, B. (2020). The effectiveness of distance learning using social media during the pandemic period of COVID-19: A case in Universitas Kristen Indonesia. *International Journal of Advanced Science and Technology*, 29(7), 1764-1772.
- 16) Nassoura, A. B. (2020). Measuring students' perceptions of online learning in higher education. *Int. J. Sci. Technol. Res*, 9, 1965-1970.
- 17) Opstoel, K., Chapelle, L., Prins, F. J., De Meester, A., Haerens, L., van Tartwijk, J., & De Petrie, K., Pope, C., & Powell, D. (2021). Grappling with complex ideas: Physical education, physical literacy, physical activity, sport and play in one professional learning initiative. *The Curriculum Journal*, 32(1), 103-117.
- 18) Prontenko, K., Griban, G., Bloshchynskiy, I., Melnychuk, I. M., Popovych, D. V., Nazaruk, V. L., ... & Novitska, I. V. (2020). Improvement of students' morpho-functional development and health in the process of sport-oriented physical education. *Wiad Lek*, 73(1), 161-168.
- 19) Quennerstedt, M. (2019). Physical education and the art of teaching: Transformative learning and teaching in physical education and sports pedagogy. *Sport, Education and Society*, 24(6).
- 20) Razouki, A., Khzami, S. E., Selmaoui, S., & Agorram, B. (2021). The contribution of physical and sports education to health education of Moroccan middle school students: Representations and practices of teachers. *Journal of Education and Health Promotion*, 10(1), 201.

Evaluation of Physical, Sports, and Health Education Learning in State Senior High Schools at Mandailing Natal Regency After the Pandemic

- 21) Risalah, A., Ibad, W., Maghfiroh, L., Azza, M. I., Cahyani, S. A., & Ulfayati, Z. (2020). Dampak pandemi COVID-19 terhadap kegiatan belajar mengajar di MI/SD (studi kbm berbasis daring bagi guru dan siswa). *JIEES: Journal of Islamic Education at Elementary School*, 1(1), 10-16.
- 22) Rosali, E. S. (2020). Aktifitas Pembelajaran daring pada masa pandemi covid-19 di jurusan pendidikan geografi universitas siliwangi Tasikmalaya. *Geosee*, 1(1).
- 23) Rosali, E. S. (2020). Aktifitas Pembelajaran daring pada masa pandemi covid-19 di jurusan pendidikan geografi universitas siliwangi Tasikmalaya. *Geosee*, 1(1).
- 24) Rudd, J. R., O'Callaghan, L., & Williams, J. (2019). Physical education pedagogies built upon theories of movement learning: How can environmental constraints be manipulated to improve children's executive function and self-regulation skills?. *International journal of environmental research and public health*, 16(9), 1630.
- 25) Sadikin, A., & Hamidah, A. (2020). Pembelajaran daring di tengah wabah covid- 19 (online learning in the middle of the covid-19 pandemic). *Biodik*, 6(2), 214-224.
- 26) Sadykova, G., & Meskill, C. (2019). Interculturality in online learning: instructor and student accommodations. *Online Learning*, 23(1), 5-21.



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Productivity of Sweet Potato (*Ipomoea Batatas* (L.) Lamb.) Crossed Between Antin 1 and Beta 2 Accessions



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ABSTRACT: The sweet potato is an important food source in the world because, in addition to carbohydrates, it contains several vitamins, minerals, β -carotene and anthocyanins. The presence of self-incompatibility causes high genetic and phenotypic variation in the wild. This allows the formation of new accessions with advanced characteristics. This study aims to determine the productivity of sweet potatoes resulting from the cross between Antin 1 and Beta 2 accessions. The research was conducted using the experimental method in a completely randomized design with 4 repeats. The stem cuttings along 7 - 8 nodes of 10 plants from the cross of Antin 1 and Beta 2 accession (the plant code = C1 to C10) were planted in planter bags with a volume of 100 liters with media consisting of a mixture of soil: sand: manure = 3 : 2 : 1. The tubers were harvested at the age of 4 months after planting, then the fresh weight of the tubers produced was measured. The data obtained were analyzed by Anova, followed by the Least Significant Difference test. The highest productivity was obtained in plants with code C6, which was 1394.6 ± 62.41 g/plant, that is equivalent to 46,486 tons/ha.

KEYWORDS: cross, Antin 1, Beta 2, productivity

I. INTRODUCTION

Sweet potato (*Ipomoea batatas* (L.) Lamb.) is an important source of amyllum after wheat, corn, potato and cassava (Huaman and Zhang, 1997). Besides being a source of amyllum, the tubers of this plant also contain a lot of vitamins C, E and B1, Fe, Ca and P (Pattikawa et al., 2012), as well as β -carotene in orange tuber sweet potatoes (Awuni et al., 2017; Mbusa et al., 2018) and anthocyanins in purple tubers [Husna et al., 2013; Islam et al., 2002]. The number of chromosomes in sweet potato is hexaploid (Srisuvan et al., 2006) and the flowers are self incompatible (Kowyama et al., 200; Tsuchiya, 2014; Baafi et al., 2016)]. Both of these cause a high level of genetic variation and result in a high level of phenotypic variation in plants in the wild. Each time crossing takes place, the offspring are potentially very diverse and have the potential to produce new accessions. As of the year 2020, 331 feature accessions have been collected from different regions in Indonesia (Rahajeng, 2020).

The Antin 1 and Beta 2 are two examples of feature accessions. The Antin 1 accession with purple tuber flesh has advantages of productivity and high anthocyanin content, good taste, and some resistance to *Sphaceloma batatas* and *Cylas formicarius* (SK Mentan, 2013), while accession Beta 2 with orange tuber flesh has advantages of productivity and high β carotene content, good taste, and some resistance to *Sphaceloma batatas* and *Cylas formicarius* (SK Mentan, 2009). The purple color of the tubers is caused by anthocyanins, which are bioactive components of the purple flavonoid group that can prevent liver cancer (Choi et al., 2012), as well as anti-diabetes (Sancho & Pastore, 2012) and antioxidants (Takahata et al., 2011). The orange color is caused by carotene, which is a tetraterpene compound composed of 8 isoprene units condensed at both ends (Ameny & Wilson, 1997). In addition to being a provitamin A, β -carotene also acts as an antioxidant to counteract free radicals (Takahata, 2011).

The crossed between the Antin 1 and Beta 2 accessions has been successfully carried out and as many as 10 plants have been collected and the morphological structure of the leaves and tubers has been described (Sulistiono et al., 2023), but the productivity of the plants resulting from the cross is not yet known.

Based on the above description, it is necessary to conduct research with the aim of knowing the productivity of sweet potatoes from the cross of Antin 1 and Beta 2 accessions. The results of this study will then be used as one of the bases for studying the content of anthocyanins, β -carotene and amylose, which are feature new accessions.

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II. METHODS

The research was conducted experimentally using a fully randomized design with 4 repeats, with the following tools, materials, and work procedures:

a. Tools and Materials

The tools and materials used were 100 l capacity planter bags, agricultural tools, scales, paddy soil, sand, manure, TSP fertilizer, and 4 stem shoots each from 10 sweet potato plants (the plant codes are C1 to C10) from the cross between Antin 1 and Beta 2 accessions carried out by Sulistiono et al. (2021) and Sulistiono et al. (2023).

b. Procedure

The planting medium consisting of a mixture of paddy soil, sand and manure in the ratio of 3:2:1 is filled up to 75% of the volume in the planter bag. Then, stem cuttings with the length of 7 - 8 nodes were planted in the planting medium. The planting was done by inserting 3 - 4 nodes of the basal of the stem shoots into the soil in a horizontal position and then burying them with the planting medium to a thickness of ± 10 cm. Then, according to the fully randomized design, all the plants in the planter bag were positioned. When the planting media began to dry out, weed control and watering were performed. The plants were fertilized with TSP at a rate of 5 g per plant when they were 2 months old. The plants were harvested 4 months after planting and the fresh weight of the tuber was measured and then analyzed by Anova followed by the Least Significant Difference test.

III. RESULTS AND DISCUSSION

Ten plants were successfully obtained by crossing sweet potato Antin 1 with Beta 2 accession (Sulistiono, et al., 2021; Sulistiono et al., 2023). One plant (code C3) did not form tubers, while the other 9 plants (C1, C2, C4, C5, C6, C7, C8, C9 and C10) formed tubers. The tuber fresh weight is shown in Figure 1.

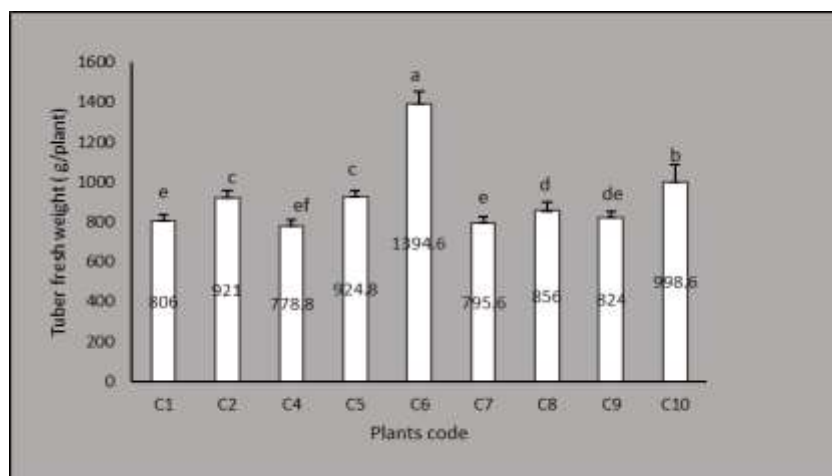


Figure 1. Fresh weight (g/plant), standard deviation (T) and BNT notation (a to f) of tubers from the crossed between Antin 1 and Beta 2. Accession

The results of the analysis using Anova obtained $F_{test} (61.8171) > F_{table} (2.45)$ at the 5% significance level, which means that 9 individual sweet potatoes resulting from the cross between Antin 1 and Beta 2 have different productivity. The results of the Least Significant Difference test show that plants coded C6 have morphological structural characteristics of ovate tuber shape, cream tuber skin color, yellow tuber flesh color, triangular leaf shape, palmati partitus leaf margins, number of lobes 5 and purple leaf vein color (Sulistiono et al., 2023). It also has the highest productivity, 1394.6 g per plant or 46,486 t/ha, assuming a number of plants per hectare is 33,333 plants (distance between mounds = 1 m and planting distance 30 cm). This productivity is higher than the potential productivity of its two parents, which is 33.2 tons per hectare for Antin 1 (SK Mentan, 2013) and 34.7 tons per hectare for Beta 2 (SK Mentan, 2009). Therefore, the C6 plants resulting from the crossed between Antin 1 and Beta 2 have the potential to be proposed as a new supreme accession. Nevertheless, further research at field scale and a comprehensive characterization are still needed.

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IV. CONCLUSIONS

The highest productivity of sweet potato plants from the crossed of the Antin 1 and Beta 2 accession was obtained in the plants with the code C6, which amounted to 1,394.6 g per plant, which is equivalent to 46,486 t/ha,

V. ACKNOWLEDGMENT

Thanks to LPPM Universitas Nusantara PGRI Kediri for the support of this research.

REFERENCES

- 1) Huaman, Z., and D. Zhang.1997. *Seetpotato*. In: Biodiversity in Trust: Conservasion on Use of Plant Genetic Resources in CGIAR. D. Fuccilo, L.Sears and P. Stapleton (Eds.) Cambridge University Press, Cambridge• USA. pp. 29-38
- 2) Pattikawa, A. B., Supamo, A., dan Prabawardani., S. 2012. Analisis Nutrisi Umbi Ubi Jalar (*Ipomoea batatas* (L.) Lamb.) Untuk Konsumsi Bayi Anak-Anak Suku Dani Distrik Kurulu Kabupaten Jayawijaya. *Jurnal AGROTEK*. 3(2):3036
- 3) Awuni, V., Alhasn, M.W., dan Amagloh, F.K. 2017. Orange-fleshed Sweet Potato (*Ipomoea batatas*) Composite Bread as A Significant Source of Dietary Vitamin A. *Food Sci. Nutr.* 00:1-6
- 4) Mbusa, H.K., Ngugi, K., Olubayo, F.M., Kivuva, B. M., Muthomi, J.W., dan Nzufe, F. M. 2018. The Inheritance of Yield Component and Beta Carotene Conten in Sweet Potato. *Journal of Agricultural Science*. 10(2): 71-
- 5) Husna, N.E., Novita, M., dan Rohaya, S. 2013. Kandungan Antosianin Dan Aktivitas Antioksidan Ubijalar Ungu Segar Dan Olahannya. *Agritech*. 33 (3): 296-302
- 6) Islam, M. S., Yosimoto, M., Terahara, N., dan Yamakawa, O. Anthocyanin Composition in Sweet Potato (*Ipomoea batatas*) Levels. *Bioscience, Biotechnology and Biochemistry*. 66 (11): 2483-248
- 7) Srisuwan, S., Sihachakr, D. & Yakovlev, S. J. 2006. The origin and evolution of sweet potato (*Ipomoea batatas* Lam.) and its wild relative throughthe cytogenetic approaches. *Plant Science* 171: 424-433
- 8) Koyama, Y., Tsuchiya, T. & Kakeda, K. 2000. Sporophytic Self-incompatibility in *Ipomoea trifida*, a Close Relative of Sweet Potato. *Annals ofBotany*. 85: 191-19
- 9) Tsuchiya, T. 2014. *Self Incompatibility System of Ipomoea trifida a Wild Tipe Sweetpotato*. In: Sexual Reproduction in Animals and Plants. Sawada, H., Inoue, N and Ivano, M. (Eds). Springer, Tokyo-Heidelberg-New York• London. Pp. 305-321
- 10) Baafi, E., Carey, E. E., Blay, E. T., Ofori, K., Gracen, V. E. & Aduening, J. M. 2016. Genetic incompatibilities in sweetpotato and implication for breeding and-userprefrred traits. *AJCS*. 10 (6): 887-894
- 11) Rahajeng, W. 2020. Keragaman Sumber Daya Genetik Ubi Jalar Koleksi Balitkabi. *Balitkabi*
- 12) Surat Keputusan Menteri Pertanian Republik Indonesia No. 165/Kpts/SR.120/1/2013
- 13) Surat Keputusan Menteri Pertanian Republik Indonesia No. 2216/Kpts/SR.120/5/2009
- 14) Sancho RAS and Pastore GM. 2012. Evaluation of the effects of anthocyanins in type 2 diabetes. *Food Res Int* 46: 378-386.
- 15) Choi JH, Hwang YP, Choi CY, Chung YC, Jeong HG. 2010.Anti-fibroticeffects of the anthocyanins isolated from the purple-fleshed sweet potato on hepatic fibrosis induced by dimethylNitrosamine administration in rats. *Food Chem. Toxicol* 48: 3137-3143
- 16) Takahata Y, Kai Y, Tanaka M, Nakayama H, Yoshinaga M. 2011. Enlargement of the variances in amount and composition of anthocyanin pigments in sweetpotato storage roots and their effect on the differences in DPPH radical-scavenging activity. *Hortic-Amsterdam* 127: 469-474
- 17) Ameny, M.A., & P.W. Wilson. 1997. Relationship Between Hunter Color Value and p-Carotene Contents in White Flesh African Sweet Potatoes (*Ipomoea batatas* Lam.). *J.Sci. Food andAgric*. 73: 301-306
- 18) Sulistiono, Agus, M.S., Mumun, N., dan Ida, R. 2021. Tingkat Pembentukan Buah dan Daya Perkecambahan Biji Ubi Jalar (*Ipomoea batatas* (L.) Lamb.) Hasil Perkawinan Silang Secara Alami. *Prosiding Seminar Nasional Sinkesjar*. 833 – 839.
- 19) Sulistiono, Rahmawati, I and Utami, B. 2023. Variasi Struktur Morfologi Umbi dan Daun Ubi Jalar (*Ipomoea batatas* (L.) Lam.) Hasil Persilangan Alami Asesi Antin 1 dengan Beta 2. *JPB. Jurnal Biologi dan Pembelajarannya (In press)*



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The Quality of Life Conditions in Public Middle School Students during the Learning Transition Covid-19



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ABSTRACT:

Purpose: The realm of a person's level of satisfaction in terms of various aspects such as physical, psychological, social, activity, material and structural needs is seen as a benchmark for the level of a good quality of life. The purpose is Conditions of the Quality of Life of Public Middle School Students during the Learning Transition Covid-19. In order to achieve learning objectives, a teacher is required to know the current condition of students because good learning should be centered on the conditions and needs of the students themselves in order to improve the student learning process during the learning transition due to the sloping cases of COVID-19 in Indonesia.

Materials and Methods: This research is a quantitative descriptive research with a survey method approach. Descriptive research is an exposure to the state of the field at the time the research takes place, by not looking for and explaining relationships, not testing hypotheses or not making predictions about research results. Basically, quantitative descriptive research focuses on observation and real conditions during research. In quantitative descriptive research, a researcher is only an observer, a category maker of behavior, a recorder of symptoms in observation notes. The method used is a survey method regarding the completeness of data through research when samples are collected using questionnaires or questionnaires as data collection instruments.

Results: The quality of life of Surakarta City Public Middle School students, seen from the results above during the transitional learning period, has an interpretation of an average value of 97.58 + 9.876. If the interpretation value of the Kidscreen_27 score is higher, it can be assumed that the lower the quality of life of Surakarta City Public Middle School Students. As for the domain that has the highest average, namely the Autonomy and Parental domains of 26.35 + 4.57, while the lowest domain is the Environment domain with an average of 15.42 + 2.42.

Conclusions: The condition of the quality of life of Surakarta City Public Middle School students produces a high average score of 97.58+9.876 indicating that the quality of life of Surakarta City Public Middle School students has low quality because the higher the quality of life value, the lower the quality of life, when viewed from for each domain of quality of life, the highest score is in the Autonomy and Parents domain with a value of 26.35 + 4.55 which means low quality of life for students due to special problems of lack of ability in self-management and relationships with parents or guardians of students. With the finding of the second highest score in the Psychological domain, namely 22.85 + 2.35, which has a direct impact on emotional symptoms and stress symptoms that occur in Surakarta City Public Middle School students.

KEYWORDS: Quality of Life Conditions, Learning Transition, Covid-19

INTRODUCTION

The rapid spread of Covid-19 in the country of Indonesia is the effect of the pandemic since 2020 around the world (Purwanto et al., 2020). Various regulations and public policies related to pandemics have been regulated by the government in such a way with the aim of mitigating a pandemic disaster so that transmission cases that occur in the community are sloping or low in transmission. From PPKM policies, PSBB, wearing masks, keeping your distance, etc. One policy that has had a major impact is on the education sector at all levels of education because the Indonesian government requires that the learning and teaching process be carried out in face-to-face schools must be replaced with a new procedure, namely online learning from their respective homes.

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The development of science that examines quality of life or quality of life continues to be developed to date and will continue to develop to assess and determine the level of a person's quality of life. Because the quality of life is created from various scientific studies where the level of quality of life can be measured by various research methods. A person in reflecting a good quality of life can be seen from the level of pleasure he makes various important choices in his life, based on the concept that quality of life can also be measured subjectively from health status to physical function (Kuniano, 2015). Regarding the physical aspect as one of the determinants of a person's quality of life, that is, in a state of perfect body, soul and social life, the individual does not have disease and is weak or infirmity.

Chronic diseases, the treatment process and the description of health status can be ascertained and seen from the high or low level of a person's quality of life (Karangora, 2012). Along with the development of a more advanced era, the quality of life is applied at the wider community level in order to obtain a measure of public health status (S. Nugroho, Nasrulloh, Karyono, Dwihandaka, & Pratama, 2021). So that in the current era in every health research, quality of life is the main requirement that can be measured (Prastiwi & Febri, 2013).

There are three important impacts of measuring quality of life (Kinasih, 2010). The first impact is that discrimination is the process of differentiating the burden of problems between groups or between individuals at a certain time. The second impact, namely evaluation, is a measurement of the status of changes in self or group at a certain period of time (Mahirah, 2017). The third impact is predicting the situation and circumstances in the future. function of quality of life is to estimate the need for services and treatment (Oktowaty, Setiawati, & Arisanti, 2018). If a person has a low quality of life it causes increased health benefits (D. Nugroho, Hidayatullah, Doewes, & Purnama, 2023). Other variables can be estimated how the quality of life as the need for services according to and cost effectiveness of each treatment (Kiik, Sahar, & Permatasari, 2018).

The online teaching and learning process during the pandemic, if it is still being carried out until now, will have a positive impact on students, namely receiving lessons at home while playing, but there is also a negative impact, namely the unevenness of technology which has an impact on students having difficulties in the online learning process (Saifulloh & Darwis, 2020). As for changes in student character, courtesy and manners, there is a clear impact when learning transitions from offline to online or from a distance learning system to face-to-face learning, it is necessary to readjust the school, teachers and students (Tri Iwandana & Stiyapranomo, 2022).

Judging from the impact of the learning transition that appears, if it is associated with the level of participation, mental health and quality of life of students will be an interesting research topic to study (Carolina, Azizah, Sholihah, Rosyidah, & Purwanti, 2022). In this study, researchers will carry out the process of collecting sample data in October 2022 starting from the second week of October 2022 because the learning transition period is still ongoing and researchers are waiting for the number of new students in class VII strata in each State Junior High School in Surakarta City. As a reference related to the learning transition period, it can be seen from the initial issuance of SE 4 ministers until later in the future there will be the revocation of the pandemic status in Indonesia.

The level of student participation in participating in learning during the transition or transition period whether it increases or decreases and is not enthusiastic about carrying out this process (Wihartanti, 2022). According to (Winanto, 2016) states that the level of participation is a combination of two psychological aspects, namely mental and emotional which have an impact on the performance of a person's body in accepting activities carried out during the learning process in order to achieve goals and a sense of responsibility for their involvement. In PJOK learning it is also necessary to apply direct practice in carrying out the teaching and learning process, direct practice by carrying out structured movements can improve student learning performance if it is related to the level of participation then how students follow the active process in learning. By knowing the level of student participation in participating in learning during the transitional period as it is now the teacher can plan the implementation of learning effectively related to the level of students' mental health (Irawati & Santaria, 2020).

The realm of a person's level of satisfaction in terms of various aspects such as physical, psychological, social, activity, material and structural needs is seen as a benchmark for the level of a good quality of life. That the purpose of life is to be prosperous which begins with the full fulfillment of one's desires which are important to him. In order to achieve learning objectives, a teacher or teacher is required to be able to know the current condition of students because good learning should be centered on the conditions and needs of the students themselves in order to improve the student learning process during the learning transition due to the sloping cases of Covid-19 in Indonesia.

METHODS

This research is a quantitative descriptive research with a survey method approach. Descriptive research is an exposure to the state of the field at the time the research takes place, by not looking for and explaining relationships, not testing hypotheses or not making predictions about research results. Basically, quantitative descriptive research focuses on observation and real

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conditions during research. In quantitative descriptive research, a researcher is only an observer, a category maker of behavior, a recorder of symptoms in observation notes. The method used is a survey method regarding the completeness of data through research when samples are collected by using a questionnaire or questionnaire as an instrument for data collection.

The use of the survey method applied to this research is a simple survey using simple statistical analysis instruments (descriptive statistics) only as complementary information so that it can be used as complementary data in research. Descriptive research is a descriptive depiction of data or information that has been collected to become new findings in a study. So that a detailed description of the final results of the research can be felt to be comprehensive and provide convincing and strong conclusions. After the data has been collected, it will enter the research data processing process. With this method, the researcher tries to describe the impact of the transition of the learning system on the quality of life of students in public junior high schools in Surakarta.

The research location for research data collection has been carried out directly in junior high schools in Surakarta City to collect data. Population is a generalization about objects or subjects which have qualities and characteristics that can be studied and conclusions can be drawn. This study used a population of twenty-seven junior high schools in Surakarta City.

The sample is the object under study and is considered to represent the entire population. Researchers when the sample is to be studied, the sample is taken using a certain method or sampling technique, so that a representative sample represents the population as a whole. Meanwhile, the sampling object of this study was junior high school students in Surakarta City as the subject of learning PJOK subjects. Determining the number of samples taken using the Slovin formula because the number of samples is too large so that for taking the number of samples that can represent the entire population, the researchers used the Slovin formula as a solution. The formula in this technique is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Information:

n = sample size/number of respondents

N= population size

e = relaxation presentation

The data collection technique in this study used a questionnaire or questionnaire which was directly filled in by students of Surakarta City Public Middle School, the researcher distributed 400 questionnaires or questionnaires to students as research probands, the use of questionnaires or questionnaires on each variable differed from one variable to another. another.

Quality of Life instrument grid table

Domain	Problem Number
Physique	1,2,3,4,5
Psychological	6,7,8,9,10,11,12
Autonomy and Parents	13,14,15,16,17,18,19
Social Support	20,21,22,23
Environment	24,25,26,27

Data analysis techniques need to be carried out by compiling, sorting data in various frequencies and percentages after which the analysis process occurs and is interpreted according to the existing data exposure using clear and detailed sentences. Assessment of question items is calculated using the percentage formula as follows:

Information :

$$P = \frac{\sum F}{N} \times 100\%$$

P = Percentage

$\sum F$ = The total score of the questionnaire results

N = Number of all respondents

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RESULTS

This section is the most important part of a study because it describes how to conduct research, how to test hypotheses, or explain the relevance of a theory to a research problem. Therefore, this section is the most dominant section or longer page. It is suggested that the parts of this chapter be separated into several sub-chapters, each of which has different problems. The main goal is to make it easy for readers to understand. Likewise, an explanation of each material or object is carried out using paragraphs. In addition, if needed, pictures, schemes or matrices can be included to support research explanations.

Address the research questions and objectives, explain whether/how the results of the analysis answer the problem statement. Discuss the relationship between the results of the analysis and previous research or/and the relationship between the results of the analysis and the theory used in the research. Convey arguments that you can convey based on the results of the analysis/findings and discussion. Explain the implications of the results of the analysis/findings on existing theory and/or practice. Explain the importance of the results of the analysis/research findings, how the results of the analysis/findings contribute to the relevant research field.

Table 1. Descriptive Statistical Analysis of one variable.

Statistics Description

Variable	N	Minimum	Maksimum	Mean	Std. Deviation
Quality of Life	400	56	122	97,58	9,876
Valid N (listwise)	400				

Based on table 1, the descriptive statistical analysis of one variable shows the minimum, maximum, average, and standard deviation values of one variable in the study. As follows, the Quality of Life variable with the lowest value is 56, the highest value is 122, the average is 97.58 and the standard deviation (SD) is 9.876.

Table 2. Results of Quality of Life Analysis and Quality of Life Domains.

Analysis	Mean	SD
Quality of Life Domains		
Physique	16,92	3,35
Psikologis	22,85	2,35
Autonomy and Parents	26,35	4,57
Social Support	15,66	2,51
Environment	15,42	2,42
Quality of Life	97,58	9,876

The quality of life of Surakarta City Public Middle School students, seen from the results above during the transitional learning period, has an interpretation of an average value of $97.58 + 9.876$. If the interpretation value of the Kidscreen_27 score is higher, it can be assumed that the lower the quality of life of Surakarta City Public Middle School Students. As for the domain that has the highest average, namely the Autonomy and Parental domains of $26.35 + 4.57$, while the lowest domain is the Environment domain with an average of $15.42 + 2.42$.

DISCUSSION

Chronic diseases, the treatment process and the description of health status can be ascertained and seen from the high and low levels of one's quality of life (Radu, Schnakovszky, Herghelegiu, Ciubotariu, & Cristea, 2020). Along with the development of a more advanced era, the quality of life is applied at the wider community level in order to obtain a measure of public health status (Liu, Chan, Liu, & Taylor-Piliae, 2018). So that in the current era in every health research, quality of life is the main requirement that can be measured. There are three important impacts of measuring quality of life (Febriani Fajar, 2018). The first impact is that Discrimination is the process of differentiating the burden of problems between groups or between individuals at a certain time. The second impact, namely evaluation, is a measurement of the status of changes in self or group at a certain period of time. The third impact is predicting the situation and circumstances in the future.

The development of science that examines quality of life or quality of life continues to be developed to date and will continue to develop to assess and determine the level of one's quality of life. Because quality of life is created from various

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scientific studies where the level of quality of life can be measured by various research methods (W. A. Nugroho, Doewes, & Siswandari, 2018). A person in reflecting a good quality of life can be seen from the level of pleasure he makes various important choices in his life, based on the concept that quality of life can also be measured subjectively from health status to physical function (Zurita-Ortega, Chacón-Cuberos, Castro-Sánchez, Gutiérrez-Vela, & González-Valero, 2018). Regarding the physical aspect as one of the determinants of a person's quality of life, namely in a perfect body, mental and social condition the individual has no disease and mental weakness or infirmity.

The realm of a person's level of satisfaction in terms of various aspects such as physical, psychological, social, activity, material and structural needs is seen as a benchmark for the level of a good quality of life (Rohmah, Purwaningsih, & Bariyah, 2012). That the purpose of life is to be prosperous which begins with the full fulfillment of one's desires which are important to him. Therefore it is important for individual abilities to be maximized as an indicator of the ability to adapt to their environment. Quality of life will produce positive and negative impacts if a person performs his life functions only for satisfaction in carrying on life (Hermino, 2020). So it can be concluded that quality of life is a level measured by health status and physical function in carrying out daily activities for the full or maximum welfare of his life.

CONCLUSION

The condition of the quality of life of Surakarta City Public Middle School students produces a high average score of 97.58+9.876 indicating that the quality of life of Surakarta City Public Middle School students has low quality because the higher the quality of life value, the lower the quality of life, when viewed from for each domain of quality of life, the highest score is in the Autonomy and Parents domain with a value of 26.35 + 4.55 which means low quality of life for students due to special problems of lack of ability in self-management and relationships with parents or guardians of students. With the finding of the second highest score in the Psychological domain, namely 22.85 + 2.35, which has a direct impact on emotional symptoms and stress symptoms that occur in Surakarta City Public Middle School students.

REFERENCES

- 1) Carolina, N., Azizah, S. N., Sholihah, L. M. N., Rosyidah, U., & Purwanti, P. (2022). Analisis Pengaruh Transisi Pembelajaran Jarak Jauh ke Pembelajaran Tatap Muka terhadap Kesehatan Mental Pelajar Pasca Pandemi Covid-19. *Seminar Nasional Psikologi UAD*, 1(0).
- 2) Febriani Fajar, E. (2018). Upaya Mencegah Penyakit Jantung dengan Olahraga. *Jurnal Ilmiah Kesehatan*, 257–266.
- 3) Hermino, A. (2020). Komunitas Masyarakat Dan Perawatan Kesehatan Dalam Peningkatan Kualitas Hidup. *Dinamika Kesehatan Jurnal Kebidanan Dan Keperawatan*, 10(1), 11–24. <https://doi.org/10.33859/dksm.v10i1.437>
- 4) Irawati, R., & Santaria, R. (2020). Persepsi Siswa SMAN 1 Palopo Terhadap Pelaksanaan Pembelajaran Daring Mata Pelajaran Kimia. *Jurnal Studi Guru Dan Pembelajaran*, 3(2), 264–270. <https://doi.org/10.30605/jsgp.3.2.2020.286>
- 5) Karangora, M. L. B. (2012). Hubungan Antara Dukungan Sosial Dan Kualitas Hidup Pada Lesbian Di Surabaya. *Jurnal Ilmiah Mahasiswa Universitas*, 1(1), 1–10.
- 6) Kiik, S. M., Sahar, J., & Permatasari, H. (2018). Peningkatan Kualitas Hidup Lanjut Usia (Lansia) Di Kota Depok Dengan Latihan Keseimbangan. *Jurnal Keperawatan Indonesia*, 21(2), 109–116. <https://doi.org/10.7454/jki.v21i2.584>
- 7) Kinasih, A. S. (2010). Pengaruh Latihan Yoga Terhadap. *Pengaruh Latihan Yoga Terhadap Peningkatan Kualitas Hidup*, 18(1), 1–12.
- 8) Kuniano, D. (2015). Menjaga Kesehatan di Usia Lanjut. *Jurnal Olahraga Prestasi*, 11(2), 115–122.
- 9) Liu, T., Chan, A. W. K., Liu, Y. H., & Taylor-Piliae, R. E. (2018). Effects of Tai Chi-based cardiac rehabilitation on aerobic endurance, psychosocial well-being, and cardiovascular risk reduction among patients with coronary heart disease: A systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, 17(4), 368–383. <https://doi.org/10.1177/1474515117749592>
- 10) Mahirah, B. (2017). Evaluasi belajar peserta didik (siswa). *Idarah: Jurnal Manajemen Pendidikan*, 1(2), 257–267.
- 11) Nugroho, D., Hidayatullah, M. F., Doewes, M., & Purnama, S. K. (2023). The effects of massed and distributed drills, muscle strength, and intelligence quotients towards tennis groundstroke skills of sport students. *Journal Pedagogy of Physical Culture and Sports*, 1(1), 14–23. <https://doi.org/10.15561/26649837.2023.0102>
- 12) Nugroho, S., Nasrulloh, A., Karyono, T. H., Dwihandaka, R., & Pratama, K. W. (2021). Effect of intensity and interval levels of trapping circuit training on the physical condition of badminton players. *Journal of Physical Education and Sport*, 21(3), 1981–1987. <https://doi.org/10.7752/jpes.2021.s3252>
- 13) Nugroho, W. A., Doewes, M., & Siswandari, S. (2018). Effect of Aerobic and Anaerobic Interval Training on Oxidative Stress. *International Journal of Multicultural and Multireligious Understanding*, 5(5), 58.

The Quality of Life Conditions in Public Middle School Students during the Learning Transition Covid-19

<https://doi.org/10.18415/ijmmu.v5i5.297>

- 14) Oktowaty, S., Setiawati, E. P., & Arisanti, N. (2018). Hubungan Fungsi Keluarga Dengan Kualitas Hidup Pasien Penyakit Kronis Degeneratif di Fasilitas Kesehatan Tingkat Pertama. *Jurnal Sistem Kesehatan*, 4(1), 1–6.
<https://doi.org/10.24198/jsk.v4i1.19180>
- 15) Prastiwi, T., & Febri. (2013). Developmental and Clinical Psychology. *Identitas Diri Remaja Pada Siswa Kelas Xi Sma Negeri 2 Pemalang Ditinjau Dari Jenis Kelamin*, 1(1), 21–27.
- 16) Purwanto, A., Pramono, R., Asbari, M., Santoso, P. B., Wijayanti, L. M., Choi, C. H., & Putri, R. S. (2020). Studi Eksploratif Dampak Pandemi COVID-19 Terhadap Proses Pembelajaran Online di Sekolah Dasar. *EduPsyCouns: Journal of Education, Psychology and Counseling*, 2(1), 1–12. Retrieved from <https://ummaspul.e-journal.id/Edupsycouns/article/view/397>
- 17) Radu, M. C., Schnakovszky, C., Hergehelegiu, E., Ciubotariu, V. A., & Cristea, I. (2020). The impact of the COVID-19 pandemic on the quality of educational process: A student survey. *International Journal of Environmental Research and Public Health*, 17(21), 1–15. <https://doi.org/10.3390/ijerph17217770>
- 18) Rohmah, A. I. N., Purwaningsih, & Bariyah, K. (2012). Kualitas hidup lanjut usia. *Jurnal Keperawatan*, 1(2), 120–132.
- 19) Saifulloh, A. M., & Darwis, M. (2020). Manajemen Pembelajaran dalam Meningkatkan Efektivitas Proses Belajar Mengajar di Masa Pandemi Covid-19. *Bidayatuna: Jurnal Pendidikan Guru Mandrasah Ibtidaiyah*, 3(2), 285.
<https://doi.org/10.36835/bidayatuna.v3i2.638>
- 20) Tri Iwandana, D., & Stiyapranomo, D. A. (2022). Penerapan Metode Demonstrasi dan Penugasan Berbasis Google Formulir Berbantuan Media Pembelajaran Vpams-Ppt untuk Meningkatkan Hasil Belajar Materi Senam Lantai. *JOSSAE (Journal of Sport Science and Education)*, 7(1), 58–65.
- 21) Wihartanti, A. R. (2022). Partisipasi Peserta Didik Dalam Pembelajaran Bahasa Inggris Di Sekolah Dasar Pada Blended Learning. *Jurnal Cakrawala Pendas*, 8(2), 367–377. <https://doi.org/10.31949/jcp.v8i2.2130>
- 22) Winanto, S. (2016). *Peranan Spiritual Quotient Terhadap Peningkatan Kinerja Perusahaan*. 8(14), 1–23.
- 23) Zurita-Ortega, F., Chacón-Cuberos, R., Castro-Sánchez, M., Gutiérrez-Vela, F. L., & González-Valero, G. (2018). Effect of an intervention program based on active video games and motor games on health indicators in university students: A pilot study. *International Journal of Environmental Research and Public Health*, 15(1), 1329.
<https://doi.org/10.3390/ijerph15071329>



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Dynamics of Hydro Landscape in and Around Yamuna River in Parts of Delhi with Special Reference to Eco Green Areas



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ABSTRACT: The study has been done with the aim to dilute the existing pollution level in the Yamuna River. The study suggests the establishment of water bodies along the river bank, so as to trap the water during peak flood period and its utilization in other seasons. The present study involves dividing the stretch 22km stretch of the river in capital city Delhi into six zones and directs to understand the rivers hydrology and environment on the whole in a stretch from Old Rail Bridge to IP Barrage (ITO area).

1. INTRODUCTION

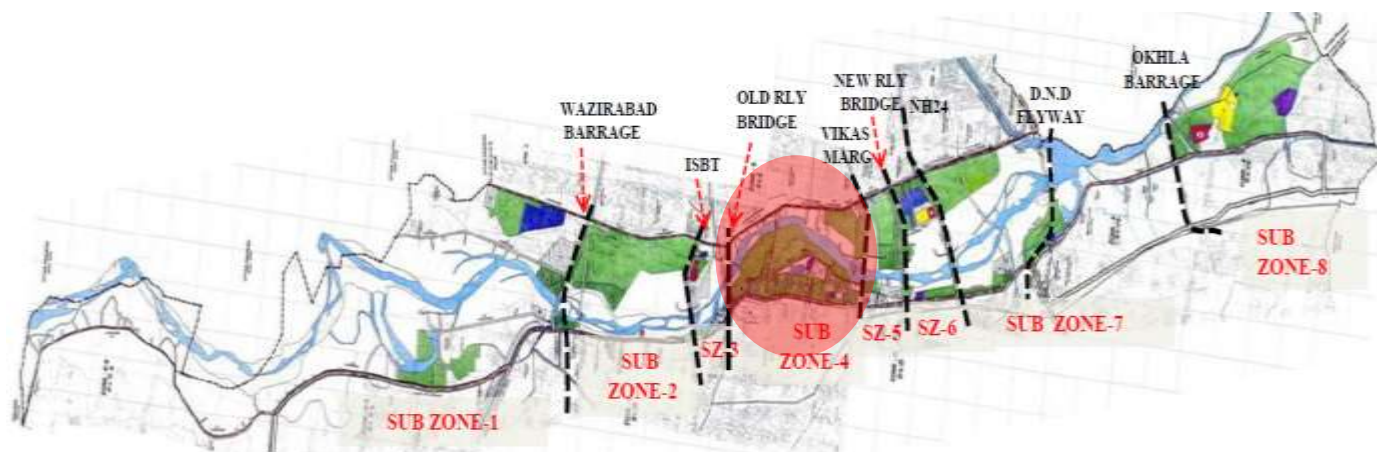
Rivers are inextricably linked to the growth of human settlement. They have played a crucial role in the establishment of settlements and their ongoing formation. Along the banks of rivers, the world's greatest civilizations have grown and prospered. The rivers have always been important as the sources of water for maintaining life as well as the agrarian cultures, whether it was the Egyptian civilisation along the Nile River or the Indus valley civilization. Thus, there were close ties between people and rivers, with the latter frequently worshipped as deities both in antiquity and today. The river played a crucial role in all aspects of human existence, from routine tasks to religious rituals, fairs, and festivals.

One of India's sacred rivers is Yamuna. In addition to the capital city Delhi, Mathura and Agra, two more significant cities within 200 km of Delhi, are of the utmost historical and cultural significance. But this particular section of the river is one of the most polluted and degraded river segments in the nation. Yamuna has now turned into a massive drain conveying the rubbish of this mega-city due to the terrible drainage and solid-waste management of the city. In order to clean the river, administrations have spent millions of rupees, yet nothing much has changed. The areas close to the river are likewise considered to be "lost spaces," and they are home to stadiums, farms, power plants, and memorials. It must be acknowledged that Delhi desperately needs few small stretches of public open space, due to the extremely high densities in the residential areas. The study intends to construct physical links, enhance environmental quality, and open up chances to engage the riverside in order to reconnect the city literally and conceptually to the river.

2. SCOPE OF THE STUDY

Only 22 km of the River Yamuna's 1,370-km journey from its birth place Yamunotri, to the ocean lie in Delhi. Even though it only makes up 2% of the river basin, but is responsible for more than 80% of the pollutant load along the entire river. Almost nine months out of every year, there is no water in the river. Water is impounded at the barrage built at Wazirabad where the river enters the city. Following that, 22 drains from Delhi carrying sewage and waste only, enter the river. In other terms, Wazirabad is a mark after which the water ceases to exist. The River Yamuna's active flood plains have been getting smaller over time, which reduces the area for recharge and subsurface flows, which can further deteriorate the river's character. Less capacity for dilution would mean higher pollution loads, which could be linked to construction activities.

The study involves dividing the stretch into six zones as;



Sub-Zones (Area, Extent, Length)

Sub Zone	Reach	Approx. Area
I	UP Border — Wazirabad Barrage	3620.0
II	Wazirabad Barrage — ISBT Bridge	1100.0
III	ISBT Bridge — Old Rly Bridge	225.0
IV	Old Rly Bridge — I.P. Barrage	800.0
V	I.P. Barrage — New Rly Bridge	365.0
VI	New Rly Bridge — NH 24 Bridge	390.0
VII	NH 24 Bridge — Okhla Barrage	1300.0
VIII	Okhla Barrage — Haryana Border	1900.0

The scope of the study is limited to zone iv i.e Old Rail Bridge - ITO Bridge and the aim is to understand the river’s environment and river hydrology on the whole in a stretch from Old Rail Bridge to IP Barrage (ITO area).

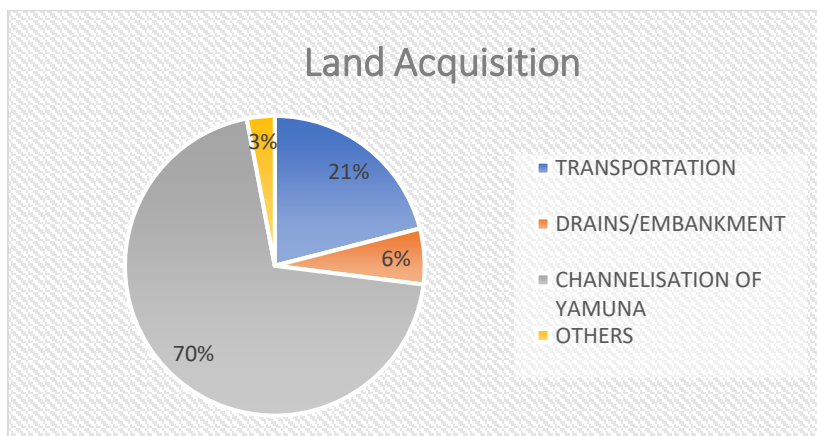
3. METHODOLOGY

The study would examine the potential effects over a period of time, beginning with the construction of various infrastructure in flood plains and taking note of certain recent changes to the area from Old Rail Bridge to IP Barrage (ITO). Main aim would be to create water bodies in a recreational park by gathering the information: River characteristics, Flood data, Rainfall data, Soil data, Vegetation cover and Climatic conditions.

River characteristics:

The river Yamuna has a small portion between the Old Railway Bridge and the Vikas Marg Bridge that is semi-meandering (bending its path in a sinusoidal manner rather than in a straight line). Further erosion on the outer bank and deposition on the inner bank are brought on by the secondary flow that has developed on the river bends. The stream or river lengthens due to the meandering motion, which also tends to make the slope less steep.

Land Acquisition

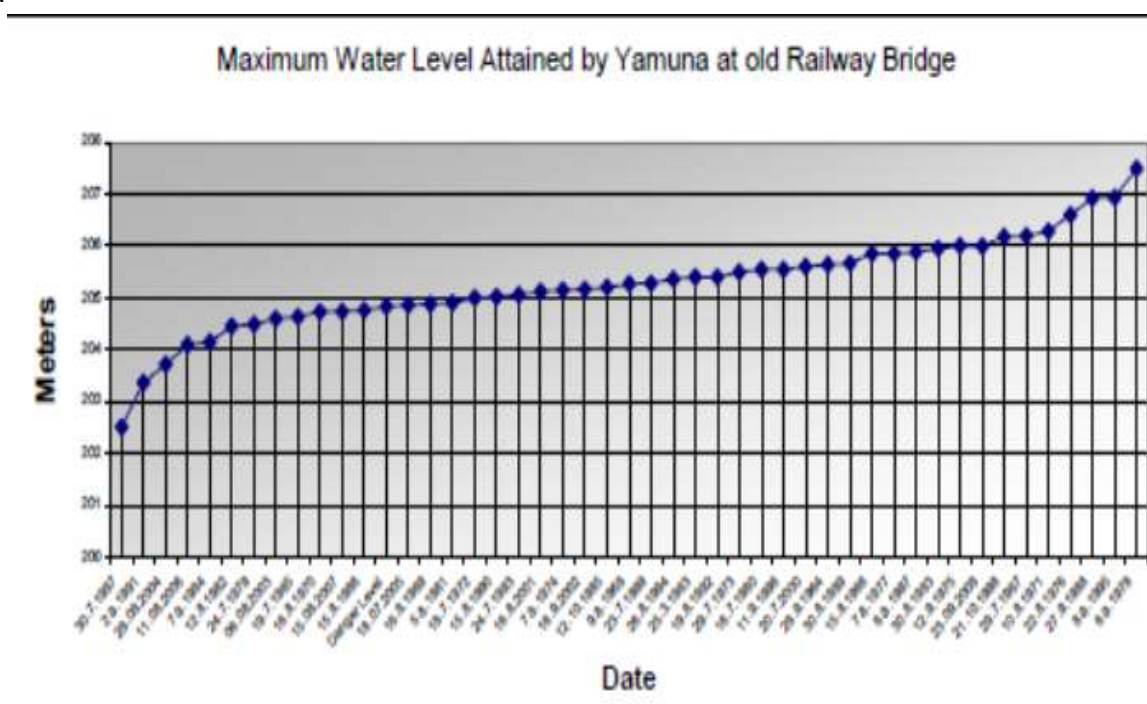


Dynamics of Hydro Landscape in and Around Yamuna River in Parts of Delhi with Special Reference to Eco Green Areas

Land cover type	Old railway to ITO	% area
River	116.08	21.43
Agriculture	347.08	44.78
Built up (others)	113.52	14.65
Built up (specific rail road projects)	57.8	7.46
Samadhis, city level recreational	90.55	11.68
Total	775.03	100

The primary roads that border the property, Mahatma Gandhi Marg and Vikas Marg, do not provide sight or physical access to the river. Although the dense plantation prevents access to the railway line from/to the river, it has the potential to be reused as a landscape element. Agriculture continues to be the main activity in the areas enclosed between the embankments, but certain farms are occasionally left fallow. There are many natural kinds of trees, plants, shrubs, and grass that need to be preserved. The amount of vegetation has decreased over time, as seen by the NDVI, and there has also been a large decline in the number of forest clusters. Along the right bank of the river Yamuna, this section of the Old Rail Bridge to IP Barrage is primarily agricultural, followed by city-level recreational areas. Other than the remaining built-up areas in this segment, which is a recent modification in landform.

Flood data



Dynamics of Hydro Landscape in and Around Yamuna River in Parts of Delhi with Special Reference to Eco Green Areas

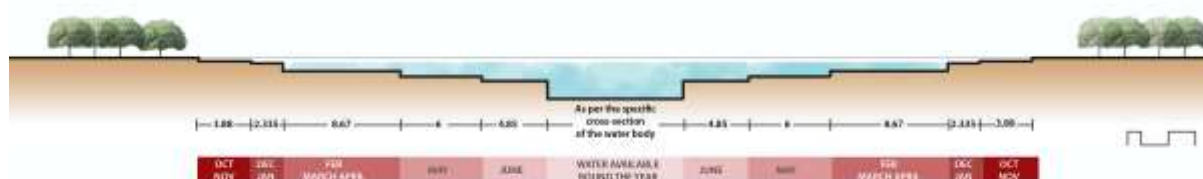
Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Rainfall (mm)	14.5	13.2	9.9	5.5	9.2	38.8	191.6	197.4	105.3	19.3	2.8	4.3	611.3
Rainy days	1.2	1	0.8	0.5	0.8	2.1	7.4	7.9	4	0.8	0.1	0.4	27
Evaporation (mm)	71	101	177	300	400	333	233	133	147	149	102	78	2224

Soil data

As per the CPCB 2006, there are eight different soil types over entire Yamuna basin. Red Sandy soil, Red & Yellow soil, Calcareous Seirozemic soil, Deep Black soil, Medium Black soil, Mixed Red & Black soil, Brown hill soil and Alluvial soil covering about 2.5, 5, 0.5, 5.5, 25.5, 15, 40, 4 and 42 percent of total respectively.

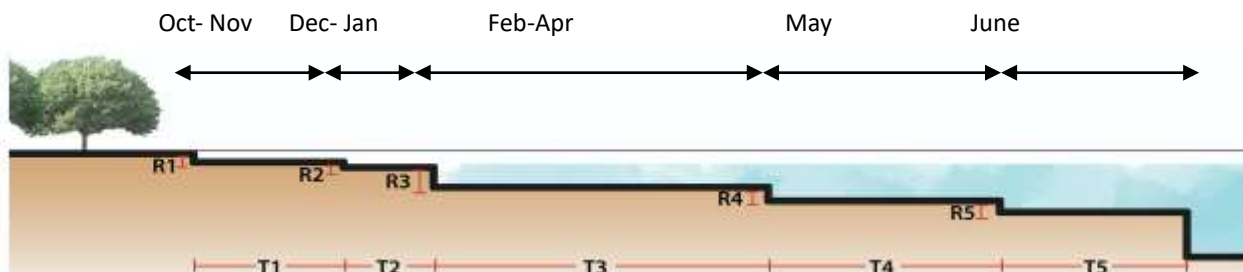
4. ANALYSIS AND DISCUSSION

To provide urban recreation areas for residents, three waterbodies on both banks of the river Yamuna have been planned parallel to its flow. They are encircled by paths that offer beautiful views. Through staggered planting in the direction of the wind flow, the offensive odour has been reduced. To create wetlands on both sides of the canal, the root zone water treatment system has been combined with canal water.



Embankment (25.5m wide) Trough Embankment (25.5m wide)

Typical Section of a Water Body



Typical Section and Nomenclature of Terraces

With groundwater level 2.25m, embankment slope 1:15, height of embankment 1.7m and base of embankment as 25.5m

Water Body	Catchment Area	Flooded water Trapped	Surface Water	Total Volume	Water trapped in Trough
		(Area x Depth)	C*I*A	m ³	as 70% of total volume
WB1	16940	8470	3049.2	11519.2	8063.44
WB2	134682	67341	24242.76	91583.76	64108.632
WB3	56880	28440	10238.4	38678.4	27074.88

Terrace Design:

Month	RAINFALL (m)	Terrace (m)
		(L = R*S)
OCT-NOV	0.251	3.765
DEC-JAN	0.149	2.235
FEB-APR	0.578	8.67
MAY	0.4	6
JUNE	0.33	4.95

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Trough Design

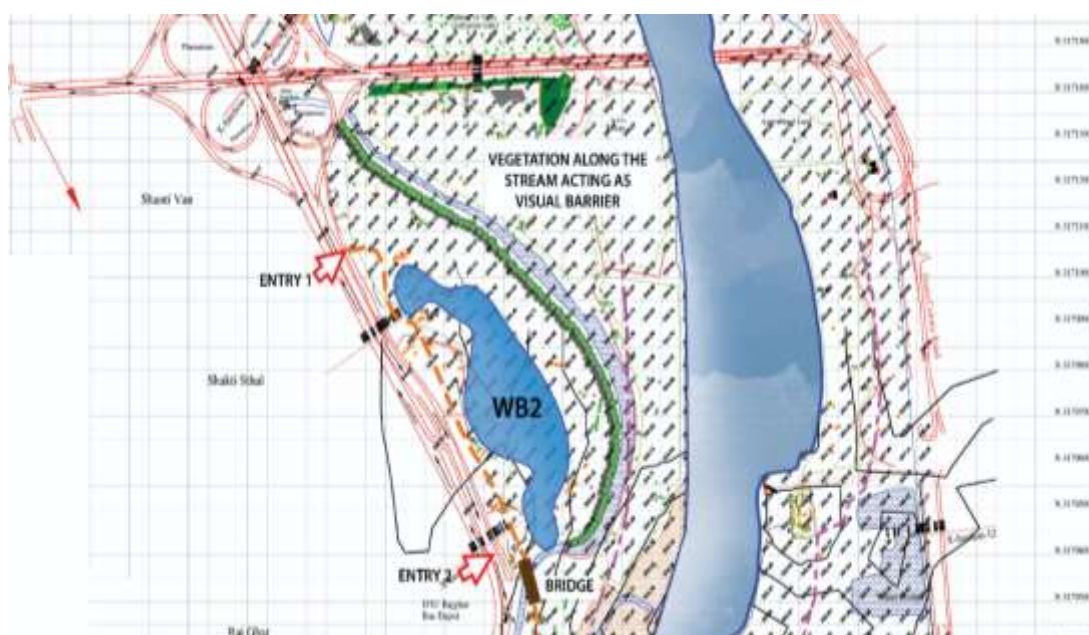
The depth of each water body was considered to be 3m and the available data the evaporation losses from Oct – Jun is 1.71m, hence depth of trough will be 1.29 m

Water Body	Area of Trough (m ²)	Total Area of Water body (m ²)
	(Vol/depth)	(embankment + Trough)
WB1	6250.7	14852.4
WB2	49696.6	60994.0
WB3	20988.3	46824.3

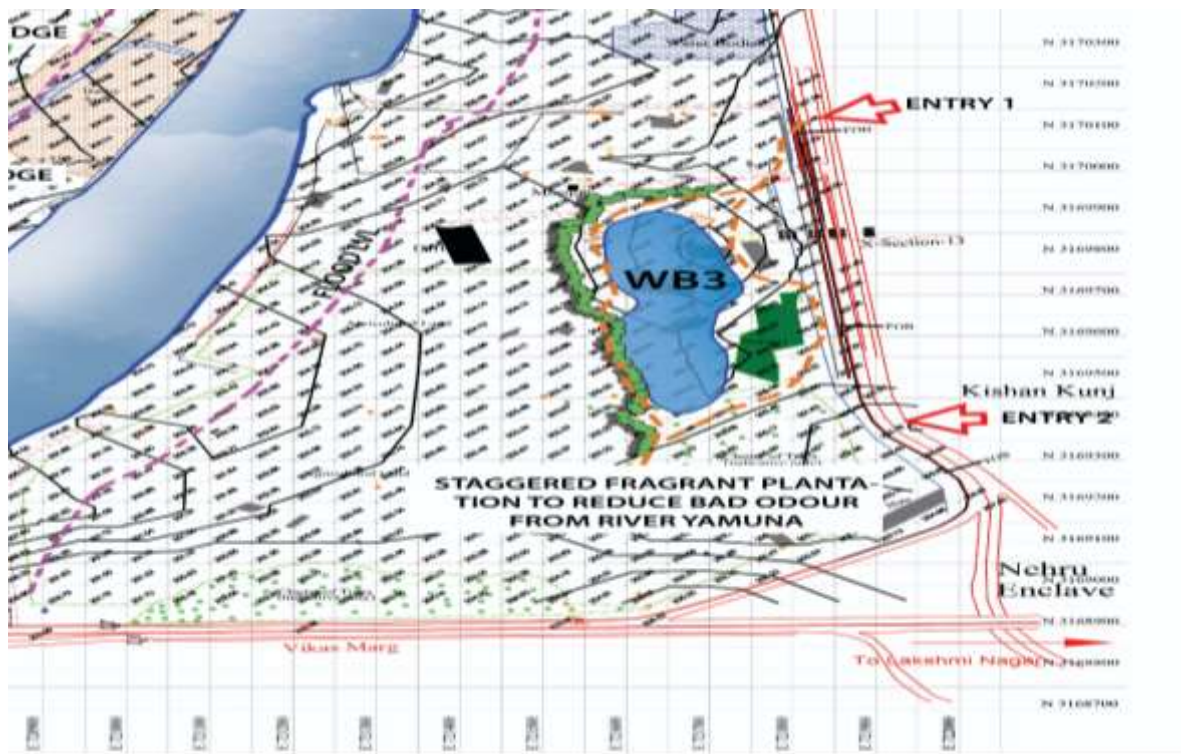
Water Body 1



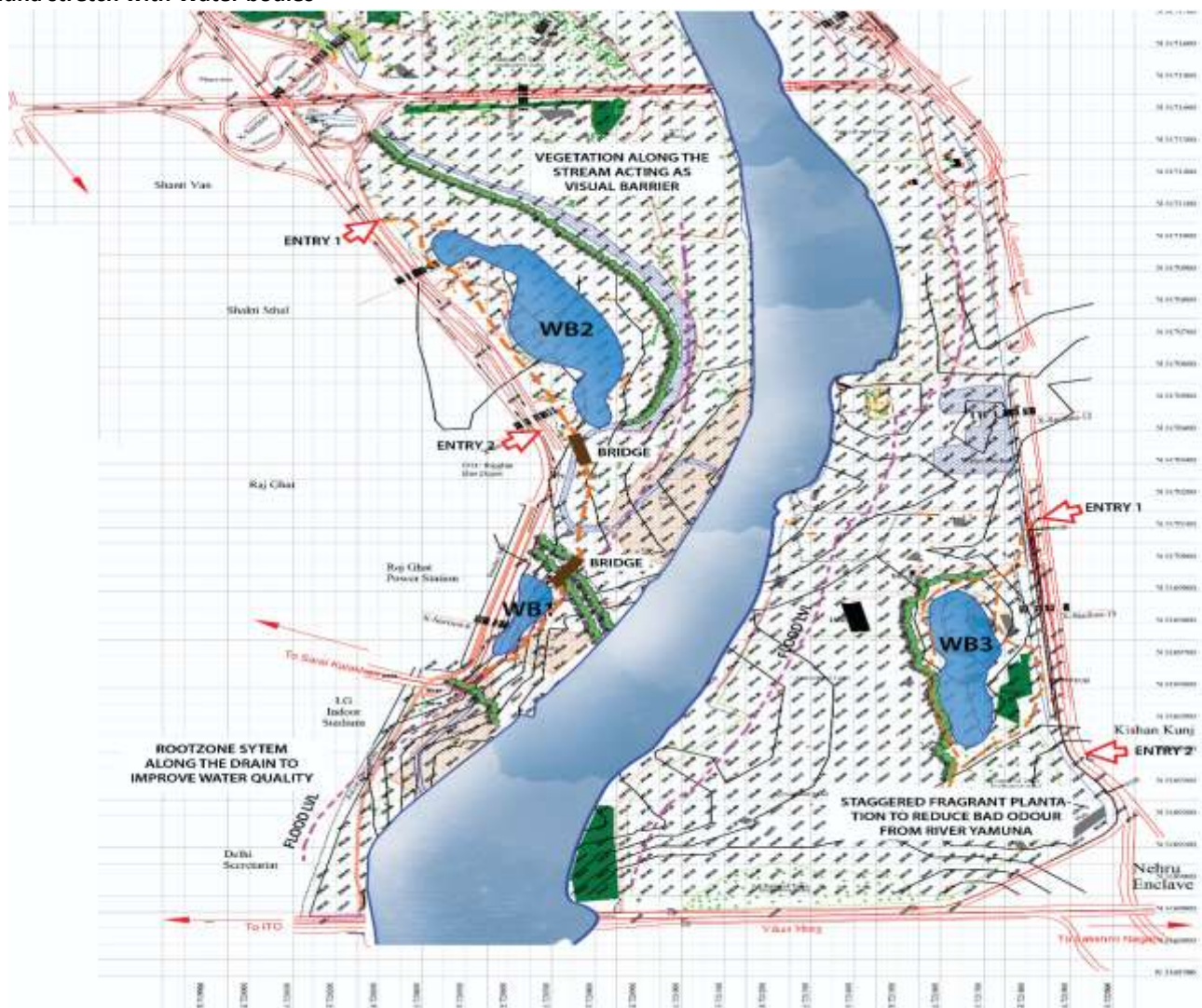
Water Body 2



Water Body 3

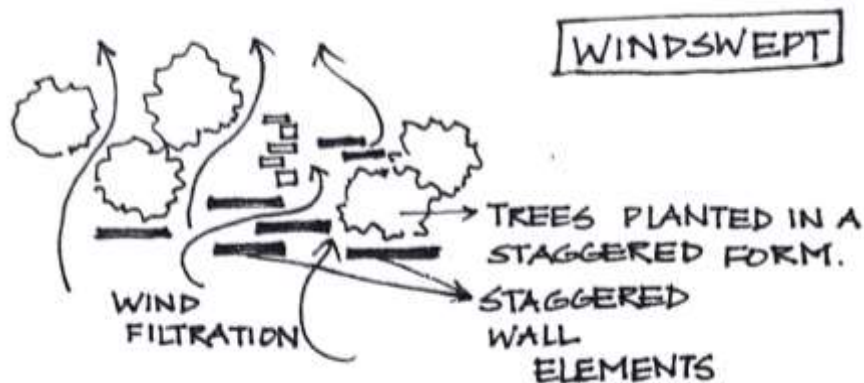


Yamuna stretch with Water bodies



5. LANDSCAPE POLICY

Plant native or non-invasive plants all along the river corridors, keeping canopy trees as close to the riverbed as possible. Develop a broad hierarchy of landscape cover types. Native plants are preferable for river edge landscapes due to their adaptation to the local environment, reaction to flood conditions, and improvement of biodiversity. By absorbing nutrients, plants near a riverbank not only slow down surface runoff but also clean groundwater before it enters the river.



6. CONCLUSION

The design vision calls for design methods and thoughtful planning of open spaces that achieve a balance between innovation and historic preservation. As a result, the riverfront will have the flexibility to change throughout time. Moreover, A higher degree of physical activity is encouraged by green spaces that are connected to other green or open areas by walking and cycling routes or greenways, which also encourage more visits and longer stays. Additionally, this will help with ecology restoration, water quality improvement, building with nature, and historical preservation. By enhancing the current vegetation, an urban park-like environment will be created. In this way a link will be created so as to improve the quality of the river and open up space to engage the river side effectively.

REFERENCES

- 1) National Water Policy (1987): *Report on National Water Policy*, Ministry of Water Resources: 1pp.
- 2) Potter, Robert B, Kumar Ashok (2004): A Profile of Noida: A New Town in the National Capital Region of India. *Geographical Paper No.174*. 32 p.
- 3) Raghunath, H. M. (1987): *Groundwater*, Second Edition, Wiley Eastern Publication.
- 4) Todd, D.K. (1980): *Groundwater Hydrology*, Second Edition, John-Wiley, New York.
- 5) Flood Order of 2009, Irrigation and Flood Control Department, Government of Delhi



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Is the BRI Delivering?

Kristina Khederlarian, PhD



ABSTRACT: Promising the hope of a brighter future, in 2013 China launched the Belt and Road Initiative (BRI) across the world. The economic strategy of the BRI lies in partnering with countries through the signing of Memorandum of Understandings (MoU). President Xi Jinping's foreign policy is aimed at investing in countries to provide greater infrastructure and development. This analysis will examine whether the BRI is actually delivering on its promises in Latin America by examining the five priorities set forth by China: policy coordination, infrastructure connectivity, unimpeded trade, financial integration, and connecting people. The findings of this paper suggest that no major gains have been made in Latin American countries that have partnered with China. We will explore the potential risks and interdependence that has been established as a result of the BRI. Some may suggest that there has not been enough time since the signing of the MoUs to truly know whether the BRI will benefit Latin America, and we address this by making suggestions on the continuing monitoring that will need to take place in the region. The analysis will provide Latin American policy makers with suggestions on how to negotiate future deals with China to achieve the best possible outcomes for partnering with China.

KEYWORDS: Belt and Road Initiative, China, Latin America, International Political Economy, GDP (Gross Domestic Product), Economics

INTRODUCTION

Launched in September 2013, China's Belt and Road Initiative has gained the attention of the international community with supporters and naysayers alike. President Xi Jinping of the CCP (Chinese Communist Party) has explained this plan as a "win-win" for participating countries and China, as it has been said to boost multipolarity and the economies of countries that join. Whereas cynics have claimed that this initiative is simply a challenge to western hegemony. As of March 2022, one hundred forty-seven countries have signed the Memorandum of Understanding (MoU) with China and twenty-one of those countries are in Latin America. In this chapter we will explore the economies of these twenty-one countries (pre and post MoU signature) to see whether the BRI is delivering. We will test the hypothesis of whether GDP (constant) will rise after signing the MoU for each of these countries. We will also examine these twenty-one countries in relation to the rest of Latin America, as most of these countries with the exception of four do fall under the designation of high or upper middle income. We will explore the relative economic designation of each country and see if the lower income economies are increasing or decreasing at the same rate of change as the high and upper middle-income countries. This analysis will help us to understand if the Belt and Road Initiative is fulfilling the five priorities set forth by China: policy coordination, infrastructure connectivity, unimpeded trade, financial integration, and connecting people.

When examining the impact of the Belt and Road Initiative, we need to first understand why China chose to partner with Latin America. Interestingly enough, Latin America was not originally part of the Belt and Road strategic partnerships. They came later and mostly as a result of Latin American countries asking to join the BRI. According to scholars, Latin America was not actually part of the Chinese strategic agenda. Some have suggested that there are stakeholders on both sides, but it is important to note that they were not initially part of the Chinese "grand strategy."¹ Some look at this grouping of countries and see economic struggles and hardships, but China saw something much more in the lands of Latin America. They saw opportunity. Latin America is a land rich with resources. By partnering in this initiative, China has gained easier access to tapping into natural resources in the region. Some have also suggested that Latin America is of interest to China, because they see an opportunity to manage their

¹ Jenkins, R. (2022). China's Belt and Road Initiative in Latin America: What has Changed? *Journal of Current Chinese Affairs*, 51(1), 13–39. <https://doi.org/10.1177/18681026211047871>

Is the BRI Delivering?

infrastructure assets long-term.² But beyond this, Latin America is in need of many things that China can offer. The first being, connection. The Belt and Road Initiative is providing a vehicle for connection in the region and beyond. By opening up opportunities for economic development between countries, the BRI gives Latin America hope for a brighter financial position in years to come. In addition, Latin America is in need of infrastructure, a service that China has the resources and expertise to provide. China is able to provide assistance in getting Latin America on 5G and more advanced in their energy development projects. This push towards infrastructure related BRI projects is probably the greatest promise of the initiative. Latin America is so far behind in this area that it is not surprising that they are in need of external assistance. According to the Inter-American Development Bank there is a deficit of approximately USD 150 billion a year or around 2.5 percent of their GDP and the lack of infrastructure development in a study of six countries in the region explains that the deficit has reduced the rate of GDP growth by 1 percent per year.³

Looking beyond just physical benefits like infrastructure and connectivity, partnering on the BRI with China gives Latin America leverage in negotiations with the United States. Prior to their Chinese partnership, Latin American countries were primarily depending on the United States for financial assistance. In many instances Latin American countries had to wait until they gained favor and economic assistance for the US to provide them with needs. Now that Latin America has another option for assistance, they are able to use this as leverage in negotiations with the US. This provides them with the ability to get the best possible deal for funds needed to finance important projects in the region. Within Latin America, we see that positive perceptions of China are increasing (although COVID19, did provide a bit of a negative effect), whereas the perceptions of the US are going down. It is fairly obvious that the benefit of the BRI for Latin America has the potential to be great.

Seeing this potential, the world has been watching as Latin American countries have begun to join forces with China. In 2017, Panama was the first country to sign the MoU with China. Then in 2018, we saw a huge increase in partnerships, as fourteen Latin American countries joined the BRI initiative: Antigua and Barbuda, Chile, Trinidad and Tobago, Uruguay, Dominica, Bolivia, Costa Rica, Cuba, Dominican Republic, Ecuador, Grenada, Guyana, Suriname and Venezuela, RB all signed MoUs in 2018. The trend of joining the initiative began to slow down after this initial influx, but countries have continued to steadily join. In 2019, Barbados, El Salvador, Jamaica and Peru partnered with China. The BRI experienced a lull in Latin America for a few years during the pandemic, but in 2022 Nicaragua and Argentina signed MoUs. That brings us to a total of twenty-one countries that are currently enrolled in this program with China. That means that six four percent of Latin America is participating in the Belt and Road Initiative to date. This is substantial, and we will continue to see this percentage increase over the upcoming months and years. Latin America currently represents fourteen percent of the countries partnered with China on the BRI. This is certainly not a small number, especially considering the initiative was well underway five years before Latin American countries began to join.

Five years have now passed since the first country joined, and it is a good time to evaluate the impact of the Belt and Road in Latin America. We can begin to ask questions, like is the BRI delivering? China promised a lot in the marketing of this initiative and it appeared to be a win-win for countries who chose to participate. The opportunities and growth potential seemed like they were so great that countries began to sign MoUs very quickly. At this point, we will turn our attention to the analysis of how the BRI is impacting these countries financially. We will look at the overall growth of GDP, and we will examine whether the economic development level of the country comes into play in their growth rate. We will also examine potential risks for partnering with China and arrive at an overall recommendation for Latin America. Up to this point, the majority of commentary has centered on the promises and this chapter will look at the reality of the BRI.

IS THE BRI WORKING IN LATIN AMERICA?

Before we can evaluate whether the Belt and Road Initiative is effective, we must turn our attention to the data and look at whether there has been a positive economic impact on the countries who have chosen to partner with China. This analysis will focus on GDP, which is defined as, "the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data is in constant local currency."⁴ By reviewing data in the constant local currency we are able to guard against the impact of inflation. It will be important for us to indicate the GDP for

² Bernhard, I. (2022, July 25). What's next for Chinese investment in Latin America and the Caribbean? Atlantic Council. Retrieved October 8, 2022, from <https://www.atlanticcouncil.org/commentary/interview/whats-next-for-chinese-investment-in-lac/>

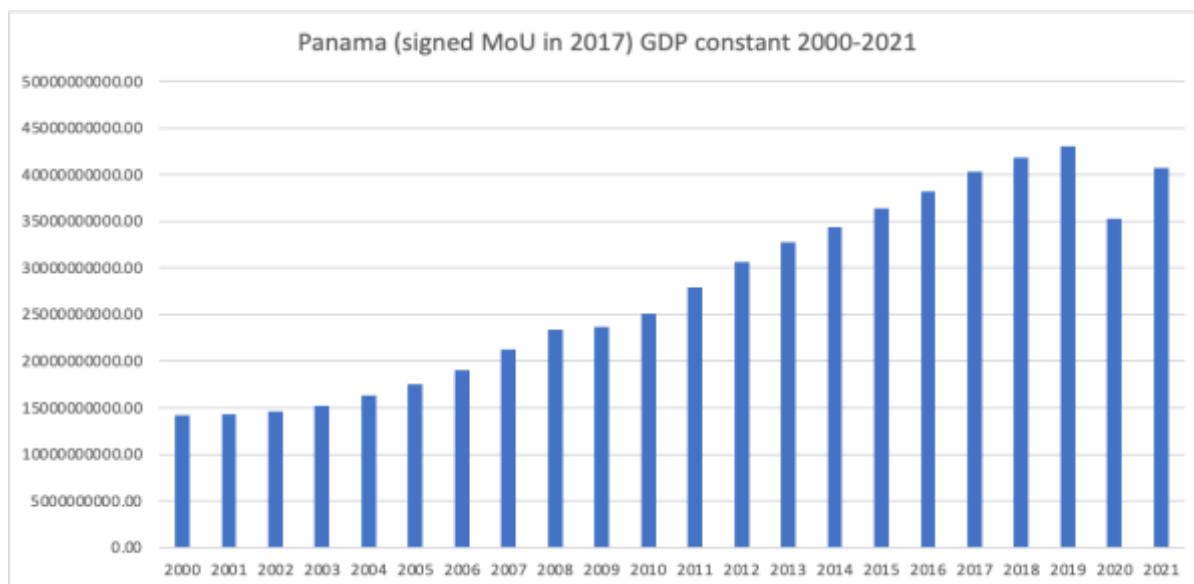
³ Jenkins, R. (2022). China's Belt and Road Initiative in Latin America: What has Changed? *Journal of Current Chinese Affairs*, 51(1), 13–39. <https://doi.org/10.1177/18681026211047871>

⁴ GDP | Data | Databank - World Bank. (n.d.). Retrieved October 5, 2022, from <https://databank.worldbank.org/databases/gdp>

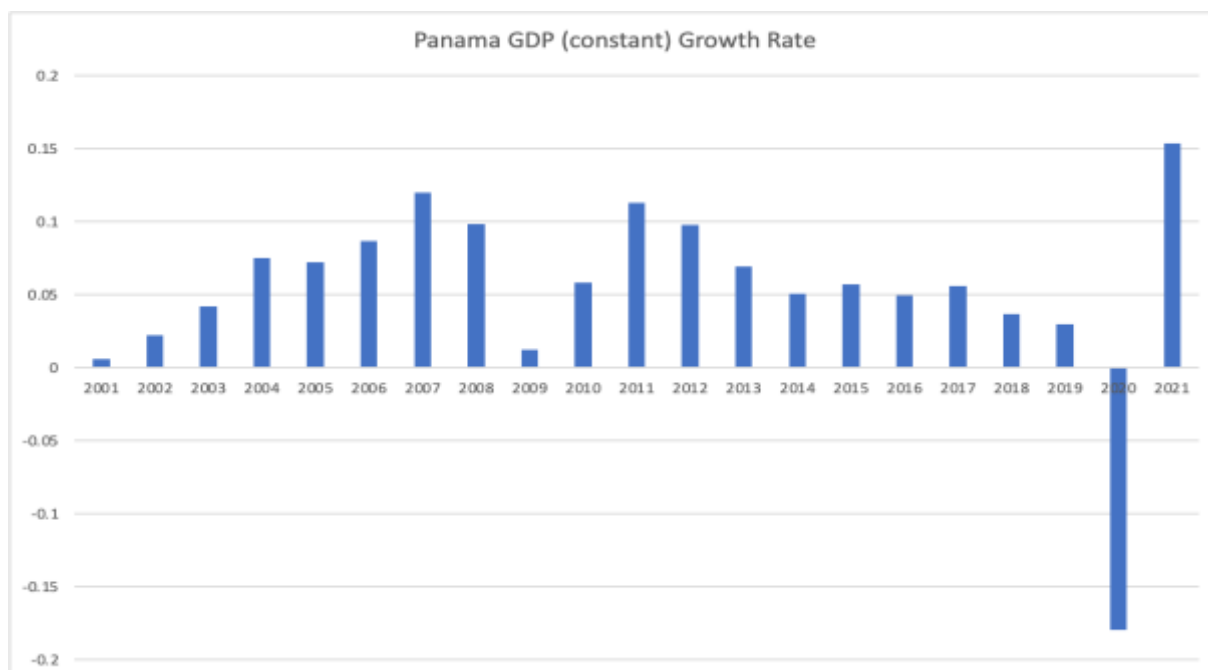
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each country that signed an MoU with China, for the period before the signature as well as post. Each analysis will reflect an indicator marking the date that the country made the decision to partner on the BRI. We will also look at the GDP growth rate for each country that signed the MoU. This will help us to understand if the BRI is helping the economy to grow.

Panama signed the MoU first, in 2017, so it gives us the longest period of time to study. In the first year after signing, in 2018 we see a slight increase in GDP. However, this increase in GDP is actually a decrease in the growth from the previous year. In 2017, the growth rate was at five percent and after signing in 2018, the growth rate dropped to three percent. In 2019, the growth rate dropped again to two percent. During the pandemic in 2020, we see a substantial decrease in overall GDP and the growth rate falls to negative two percent. This drop during COVID, is constant across Latin America and does not seem to be related to the signing of the MoU since we see it in the countries that have not signed as well. In 2021, most countries including Panama have returned to a positive growth rate although GDP has not returned to the level it was at before the pandemic. In the case of Panama, we can say that after signing the BRI, the economic condition of the country simply has not shown signs of improvement.



Title: The above figure shows GDP (constant) in Panama for the period of 2000-2021⁵

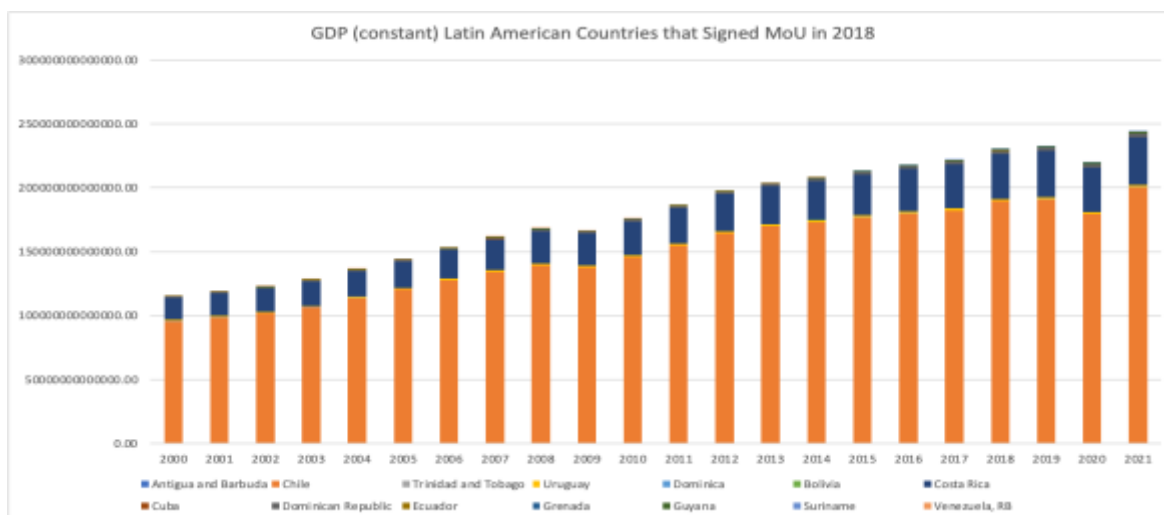


Title: The above figure shows the GDP (constant) growth rates in Panama for 2000-2021 (growth rates were calculated by subtracting the current year GDP by the previous year GDP, and then dividing by the previous year GDP)

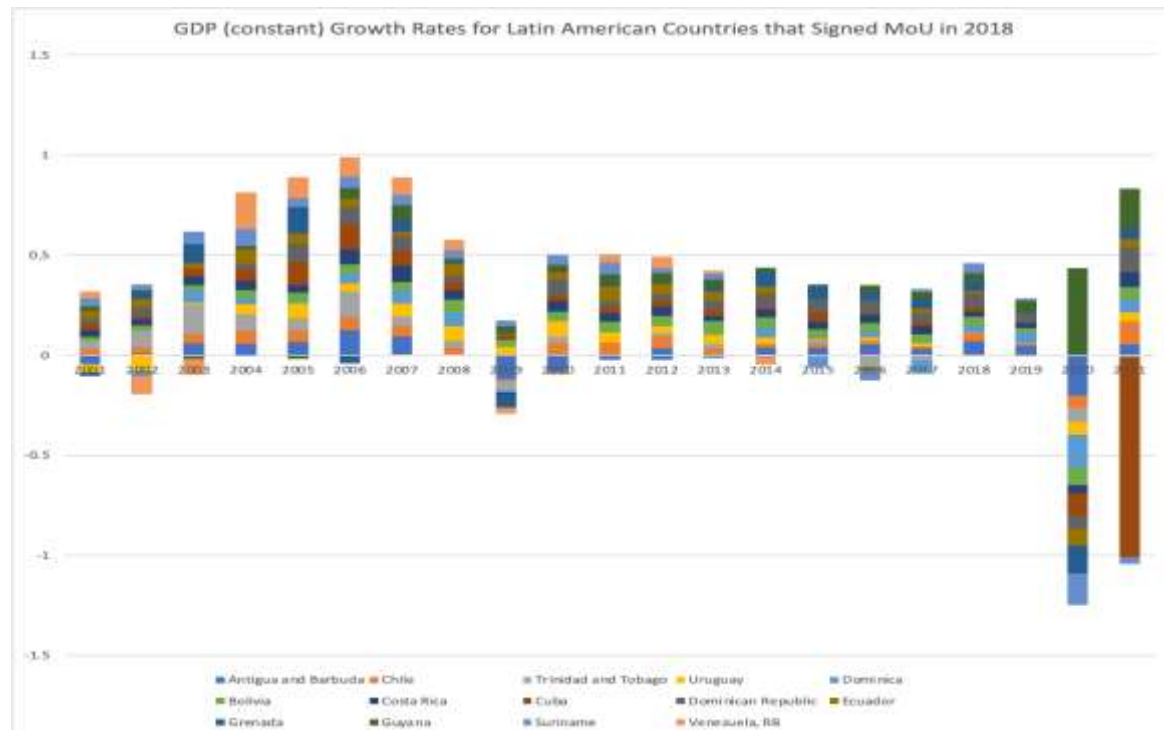
⁵ GDP | Data | Databank - World Bank. (n.d.). Retrieved October 5, 2022, from <https://databank.worldbank.org/databases/gdp>

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Turning our attention to the year with the majority of signatures, we will look at the GDP and growth rates for countries that signed the MoU in 2018. Overall we see a very similar trend with these countries, as what we saw in Panama. In the year immediately following the signature, 2019, the GDP (constant) value increases but this can be a bit misleading because in the growth rate again, we see that it has decreased. So the countries that signed in 2018 did not perform at the same rate of growth as they did in the year before they signed. We see the dip again in 2020, which will be accredited to the pandemic. Then in 2021, GDP is restored in most countries. Some of the countries in this grouping have still continued to experience negative growth rate, even post-pandemic (Trinidad and Tobago, Cuba and Suriname). Whereas Antigua and Barbuda, Chile, Uruguay, Dominica, Bolivia, Costa Rica, Dominican Republic, Ecuador, Grenada and Guyana are showing strong growth in 2021. Their recovery rates are showing across the board improvement from what they were at pre-pandemic, which is helping their economies to recover strongly.



Title: The above figure is showing the GDP (constant) for all Latin American countries that signed the MoU with China in 2018, during the 2000-2021 period⁶

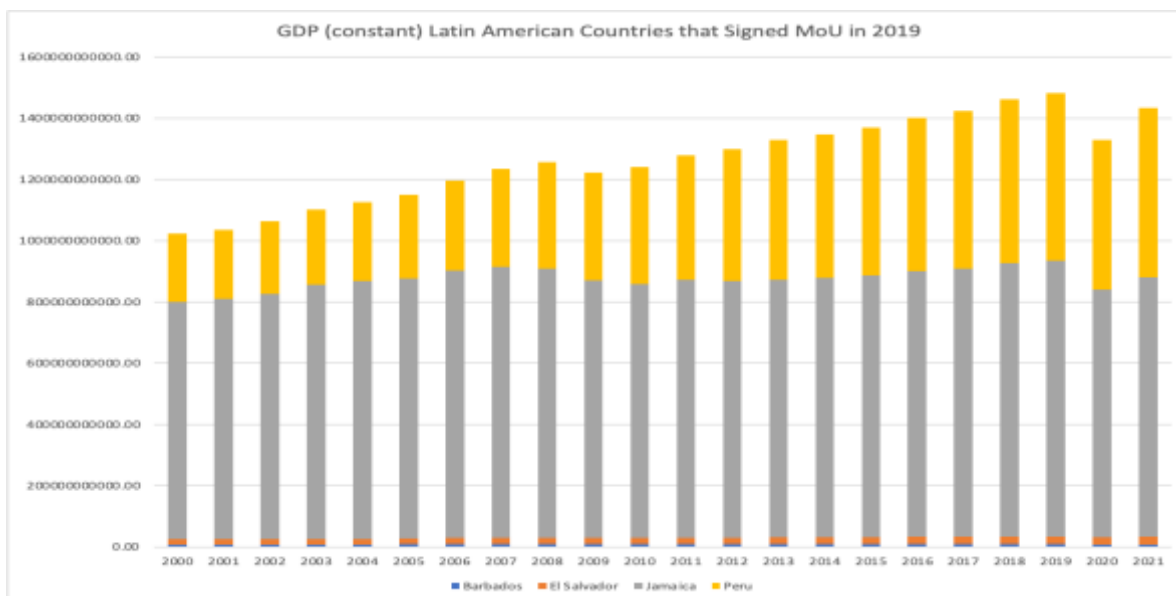


Title: The above figure shows the GDP (constant) growth rates in all countries that signed the MoU in 2018 for 2000-2021 (growth rates were calculated by subtracting the current year GDP by the previous year GDP, and then dividing by the previous year GDP)

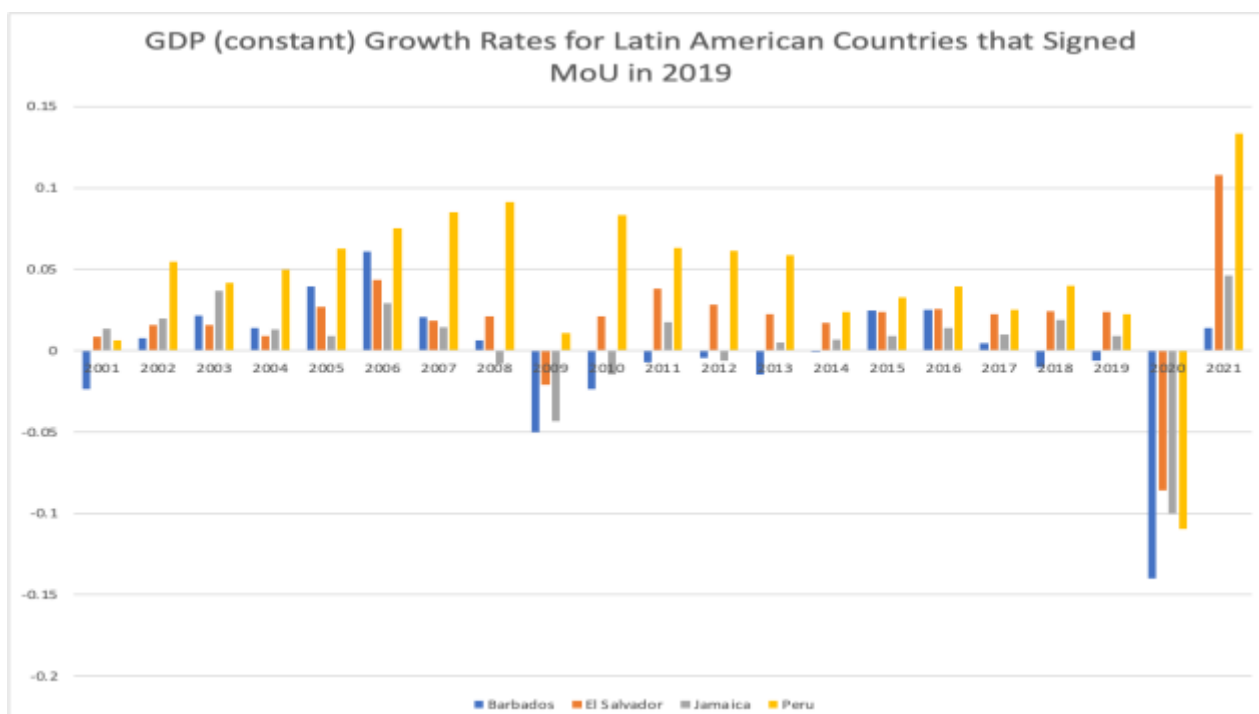
⁶ GDP | Data | Databank - World Bank. (n.d.). Retrieved October 5, 2022, from <https://databank.worldbank.org/databases/gdp>

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When looking at countries that signed the MoU in 2019, we see the economic condition is simply not improving at all. Similar to other Latin American countries: Barbados, El Salvador, Jamaica and Peru, all took a major hit to GDP in 2020 during the pandemic. All of these countries decreased in overall GDP. The interesting thing about this grouping of countries is that many of them still did not recover in 2021. In Barbados and Jamaica, we see that GDP performance is still lower than it was before the pandemic which was also before they signed the MoU in 2019. On the other hand, we see that El Salvador and Peru are just barely over the level of GDP performance from 2019. Some may accredit this to the pandemic and not the BRI, we will need to continue to monitor performance in upcoming years to evaluate the impact of the BRI.



Title: The above figure is showing the GDP (constant) for all Latin American countries that signed the MoU with China in 2019, during the 2000-2021 period⁷



Title: The above figure shows the GDP (constant) growth rates in all countries that signed the MoU in 2019 for 2000-2021 (growth rates were calculated by subtracting the current year GDP by the previous year GDP, and then dividing by the previous year GDP)

⁷ GDP | Data | Databank - World Bank. (n.d.). Retrieved October 5, 2022, from <https://databank.worldbank.org/databases/gdp>

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In 2022, Nicaragua and Argentina signed the MoU with China and obviously we will not be able to evaluate the impact of the BRI yet on their economies. Although, we would expect to see similar trends here.

The next question that arises in this analysis, is whether the income level of the country impacts how well their performance with the BRI will be. High income countries in Latin America that have partnered with China include: Panama, Antigua and Barbuda, Chile, Trinidad and Tobago, Uruguay and Barbados. Upper middle income countries include: Costa Rica, Cuba, Dominican Republic, Ecuador, Grenada, Guyana, Suriname, Venezuela, RB, Jamaica, Peru and Argentina. Bolivia, El Salvador and Nicaragua are considered low middle income. Dominica is considered low income.

When looking at the high income countries, we see that the only country that is fully recovered post-pandemic is Chile. In 2021, Chile had a higher GDP than they did in 2019. However, Panama, Antigua and Barbuda, Trinidad and Tobago, Uruguay and Barbados are all still struggling to reach the level they were at in 2019. Trinidad and Tobago is the only high income country that did not see an increase in GDP from 2020 to 2021. Panama, Antigua and Barbuda, Uruguay and Barbados are all doing better in 2021, but they have not recovered to the GDP level that they were at in 2019.

For the upper middle income countries of Costa Rica, Cuba, Dominican Republic, Ecuador, Grenada, Guyana, Suriname, Venezuela, RB, Jamaica, Peru and Argentina, we see that all of these countries also experienced a GDP drop in 2020. Interestingly, more upper middle income countries are exceeding their level of performance in 2021 as compared to what they were at in 2019. The Dominican Republic, Guyana, Costa Rica and Peru are all at a higher GDP in 2021 than compared to where they were in 2019. The rest of the countries are still struggling to get back to their previous performance.

For the low middle income countries of Bolivia, El Salvador and Nicaragua we see that they also all experienced the drop of GDP in 2020. All three of these countries have recovered to higher GDP levels than pre-pandemic. Bolivia, El Salvador and Nicaragua are all experiencing GDP numbers that are higher in 2021 as compared to 2019. For the low income country of Dominica, we see that they took a dip in GDP during 2020 and they are still not at the level that they were at in 2019. So we can conclude that Dominica's economy is still struggling to recover.

When looking at the income level of a country, I do not think we can say whether or not they will experience GDP growth. The results are certainly interesting, but not consistent across the income level. In addition, with the pandemic in 2020 we simply can not credit drops in GDP to the Belt and Road initiative. The world as a whole experienced a drop in GDP. However, we see that GDP at the world level has recovered when you compare the 2019 GDP data to the 2021. However, as explained above, many Latin American economies have not followed this same upward trend.

Another area that many scholars have examined is the trade relationship between China and Latin America. Many believed that the previous emphasis on trade between the two parties would be less important as China became more intertwined with infrastructure and investment in the region. This is still up for debate, but what we do see is that, "China's economic goals in LAC include securing access to raw materials (such as oil, ores, and minerals) and agricultural goods (especially soybeans); establishing new markets for Chinese goods, including high-value-added products; and partnering with LAC firms to access and jointly develop technology. China also has sought investment opportunities in Latin America for its infrastructure firms. Total China-LAC trade increased from almost \$18 billion in 2002 to nearly \$449 billion in 2021. China's imports from LAC amounted to \$221 billion in 2021, consisting primarily of natural resources, including ores (42%), soybeans (16%), mineral fuels and oils (10%), meat (6%), and copper (5%). China's exports to the region in 2021 amounted to \$228 billion, with major exports including electrical machinery and equipment (21%), machinery and mechanical appliances (15%), and motor vehicles and parts (7%). China has become the top trading partner of Brazil, Chile, Peru, and Uruguay and the second-largest trading partner for many other countries. China has free-trade agreements with Chile, Costa Rica, and Peru and, in February 2022, launched talks with Ecuador."⁸ The initial investment trends that were initially seen in 2015-2016 seem to have halted. Research on OFDI, loans and contracts may be important still but research indicates that the BRI has not led to a more even distribution of trade. We see a shift towards Latin American dependence on China⁹

IS IT TOO SOON TO TELL?

By looking at macroeconomic indicators in Latin American countries that have signed MoUs, we see that from the date that they signed until now, not much has improved. In many cases, the economy is actually doing worse or they have experienced a slow down in growth. In addition, the pandemic has added an unexpected twist in the analysis. Across Latin America, countries took a

⁸ Sullivan, M., Lum, T., China's Engagement with Latin America and the Caribbean (2022). Congressional Research Service. Retrieved October 8, 2022, from <https://sgp.fas.org/crs/row/IF10982.pdf>.

⁹ Jenkins, R. (2022). China's Belt and Road Initiative in Latin America: What has Changed? *Journal of Current Chinese Affairs*, 51(1), 13–39. <https://doi.org/10.1177/18681026211047871>

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big hit in GDP and economic growth. A hit that many are still trying to recover from. In the case of Panama, since they were the first country to sign, we would expect that a five year period would give us a good indicator of whether the BRI is delivering, but even in this case we see that the BRI did not do much good in the three years post-signature and then the pandemic hit. We will need to continue to monitor the impact of the BRI to truly determine if it is working, because at this point, that simple answer is no and unforeseen factors may have impacted the delay in stimulating the economies of these countries.

In order to better understand if the BRI is going to work, we should examine whether China is engaging in projects that are known to stimulate GDP growth. Developing economies need to work on promoting literacy in their countries, getting more women to enter the workforce, human development (HDI), as well as infrastructure. One of the most promising signs of future growth that BRI may stimulate on developing economies is their focus on energy. It has been found that countries that use more energy, have a higher growth of their GDP.¹⁰ When examining the goals of the BRI, this would be seen in their focus on infrastructure connectivity. The five goals of the BRI include improving the following: policy coordination, infrastructure connectivity, unimpeded trade, financial integration, and connecting people. Clearly infrastructure connectivity will help aid in GDP growth, but many of the other GDP multipliers are simply missing. We might expect infrastructure projects to be a central point for BRI projects in Latin America. The region also wants to get on 5G and China has the expertise to deliver that. In addition, Latin American countries need to also be on the lookout for other methods that are proven to stimulate GDP growth.

By examining the types of projects that China has historically engaged in under the Belt and Road Initiative, can help us to understand the potential impact they may have on GDP growth in the future of countries who partner with them. As previously mentioned, infrastructure building is one of the signatures of the BRI, and is clearly on the Chinese agenda for global development. According to Ray and Simmons, more than fifty percent of the finance commitments (\$249 billion), are under the umbrella of infrastructure initiatives- specifically in the area of transportation and power generation and distribution. They suggest that this number is not even including the \$114 billion that China has financed in the oil, gas and mining projects. One of these projects was in Latin America. Venezuela accepted \$14 billion that is expected to be used on transportation, power generation, heavy industry, and public housing. Research in this area has confirmed that China will be focused on infrastructure as the goal of the BRI mentions.¹¹

China had previously set a precedent for giving out large loans. The China Development Bank was notorious for giving out billions of dollars in loans to developing countries. However, the pandemic changed this and we now see a shift in China's strategy. The China Development Bank has not been giving out large loans like this to Latin America since COVID-19. We see that Chinese business people have been buying and merging with businesses in Latin America. When examining the types of activity that these acquisitions and mergers are aimed at, we see that China is mostly interested in consumer products and services, infrastructure and energy. Speculation suggests that in the future we may see an increase in entertainment and online gaming as well.¹² This was expanded on in a recent Atlantic Council interview with José Roberto Martins, a São Paulo, Brazil-based partner at the law firm Trench Rossi Watanabe Advogados. "Within energy and power, Roberto sees Chinese investment diversifying across conventional and renewable sources, including a strong interest in hydropower plants. Notable deals included China Yangtze Power's \$3.59 billion acquisition of Sempra Energy's Peruvian assets in 2019 and China's State Power Investment Corporation's investment in Gas Natural Açú's liquefied natural gas power plants. (In the interest of disclosure, Baker McKenzie provided legal counsel to parties in both transactions.) When it comes to geography, Roberto notes that Brazil is the largest market for Chinese mergers and acquisitions and will continue to be so, but we should expect Chinese dealmaking to rise in Argentina, Chile, Colombia, Mexico, and Peru. Alejandro adds that although larger countries tend to see more Chinese financing, size is far from a definitive factor. Smaller countries such as Ecuador receive significant resources from China."¹³ This strategy will certainly provide Latin America with access to resources for things like energy and infrastructure. The question still stands as to whether

¹⁰ Hannesson, R. (2009). Energy and GDP growth. *International Journal of Energy Sector Management*, 3(2), 157–170. <https://doi.org/10.1108/17506220910970560>

¹¹ Ray, R., & Simmons, B. A. (2020, December 7). Tracking China's Overseas Development Finance: Global development policy center. Global Development Policy Center Tracking Chinas Overseas Development Finance Comments. Retrieved October 7, 2022, from <https://www.bu.edu/gdp/2020/12/07/tracking-chinas-overseas-development-finance/>

¹² Bernhard, I. (2022, July 25). What's next for Chinese investment in Latin America and the Caribbean? Atlantic Council. Retrieved October 8, 2022, from <https://www.atlanticcouncil.org/commentary/interview/whats-next-for-chinese-investment-in-lac/>

¹³ Bernhard, I. (2022, July 25). What's next for Chinese investment in Latin America and the Caribbean? Atlantic Council. Retrieved October 8, 2022, from <https://www.atlanticcouncil.org/commentary/interview/whats-next-for-chinese-investment-in-lac/>

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this will really create the change that Latin America has hoped for. There is a possibility that the China Development Bank will begin granting loans again now that the pandemic is fading out and internal Chinese economic entities are stronger.

Many people are still fearful that the BRI will have many potential risks for Latin America. Many critics come from the west and much has been said about the BRI threatening western power, but this is not the only criticism of the BRI. Some of these risks are environmental, because China does not have a track record for being very environmentally conscious. When parenting on BRI projects, this will be something that China has made a commitment to change. This will need to be monitored so that projects are accountable to maintaining environmentally safe policies. Another issue is whether China will be supportive of local populations in Latin America. This can be addressed by encouraging China to make jobs for Latin Americans rather than bringing in outsider workers who become immigrants into the region. Latin America can negotiate project terms to ensure that the local job market is stimulated rather than hurt by foreign intervention, like what has previously occurred in the Caribbean. An important aspect of successful project coordination will occur at the close of the BRI projects. Adequate close out methods will need to be implemented to ensure that more confusion and clean up will not be necessary once projects come to a close in the region. This has been an issue in Peru and ensuring that it does not continue to occur in other countries will be imperative.

Other potential issues have been identified as problems that may arise, including: a further emphasis on the unequal trade partnership, an increase in competition for local companies, and higher debt. Rather than accepting these conditions at face value, scholars suggest that Latin American countries implement policies that help avoid these pitfalls. Some scholars have suggested that the BRI in Latin America is akin to colonialism and that it will simply increase dependence on China as opposed to actually strengthening the region through connectivity. Many critics of the BRI are concerned that it will challenge the influence of the US, and push them out of global dominance even further. This sentiment has been expressed in various ways to countries who are considering joining the BRI. At this point, any country who signs an MoU is risking their relationship with the US and it may cause doubts in whether they choose to join the initiative.¹⁴

CONCLUSIONS

In evaluating the BRI up to this point, we can clearly see that no substantial macro-economic gains have occurred since countries have signed the BRI in Latin America. In some cases, the pandemic has made it difficult for us to truly evaluate the economic performance of these Latin American economies. In 2020, all of the countries that had signed MoUs with China were impacted negatively by the pandemic and all of the GDP numbers decreased. This was constant with what we saw in the world as a whole. Therefore, we cannot accredit the dip in GDP to the Belt and Road Initiative. COVID19 certainly complicated the global economy. However, there are about fifteen countries that signed in 2017 and 2018 and we did not see significant growth rates in any of these economies before the pandemic dropped their numbers in 2020. It might be too soon for us to tell whether the BRI is actually working to stimulate Latin American economies and we will need to continue to monitor this.

When evaluating the results of the BRI up to this point, it is important to remember that Latin America was not a part of the initial plan set forth by China. They joined later, after asking to be considered. We say that the China Development Bank did initially give large loans, but in recent years this is no longer the case. We now see a shift away from this type of lending, and a move towards mergers and acquisitions of business ventures that were once dominated by westerners. China is clearly interested in controlling and managing Latin American infrastructure. Since there is such a deficit in this area, countries in Latin America are very tempted to let China take this control. Chinese investment is now leaving many people wondering if the BRI is actually going to help Latin American countries, or result in a dependence on China. Trade between Latin America and China is strong, and appears to have an uneven distribution. Latin American countries are becoming more dependent on China. Evaluation needs to continue as the pandemic is now over, to evaluate whether countries in this region are actually able to make the economic gains that were expected.

Although we need more time to evaluate whether the BRI is actually delivering, we can make recommendations on the types of projects that will increase GDP based on research into GDP multipliers. We know that it will be imperative that Latin America works on increasing their literacy and education in the region, we also know that promoting women will be important and the more women that enter the workforce will help GDP growth. In addition, we also know that projects aimed at the development of infrastructure will provide the foundation that Latin America needs to stabilize economically and grow. There are lessons that can be learned from the past as well. Latin America will need to be cognizant of negotiating arrangements for the localization of jobs to avoid external workers coming into their countries through the BRI and taking jobs. For long term economic stability, unemployment rates will need to be kept low. In addition, projects will need to be appropriately executed so that the

¹⁴ Jenkins, R. (2022). China's Belt and Road Initiative in Latin America: What has Changed? *Journal of Current Chinese Affairs*, 51(1), 13–39. <https://doi.org/10.1177/18681026211047871>

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close of the projects do not generate more clean up. The Caribbean and Peru are excellent case studies on how elements like these two can create problems in Latin America.

Only time will tell if the Belt and Road is destined to be a success in Latin America. At this point, we can say that little economic growth has been seen and lots of potential risks are present. China may have overextended their reach when they added Latin America to the BRI. Recent strategic decisions are leaving onlookers to wonder if this initiative will simply result in a dependence on China. Post-pandemic recovery may change this, if China and Latin America are able to partner on the types of projects that will stimulate GDP growth by stabilizing the region. Unfortunately, this seems unlikely but not impossible. Latin American countries can negotiate policy terms that look out for their own interests when taking on new BRI projects and leverage the support of this rising Chinese power, while remembering that their own sovereign interests will need to be taken into account to avoid over dependence. There is a great opportunity for Latin America to advance in areas that would not be possible without external assistance. It will be imperative that they remain cognizant of their own long-term interests in all partnerships. Continuous monitoring of macro-economic indicators will help to answer questions for Latin American countries. Rather than simply looking at projects and individual venturers, we would urge them to ensure their own economies are sustained for long-term economic growth, rather than dependence on another stronger country.

REFERENCES

- 1) Bernhard, I. (2022, July 25). What's next for Chinese investment in Latin America and the Caribbean? Atlantic Council. Retrieved October 8, 2022, from <https://www.atlanticcouncil.org/commentary/interview/whats-next-for-chinese-investment-in-lac/>
- 2) GDP | Data | Databank - World Bank. (n.d.). Retrieved October 5, 2022, from <https://databank.worldbank.org/databases/gdp>
- 3) Hannesson, R. (2009). Energy and GDP growth. *International Journal of Energy Sector Management*, 3(2), 157–170. <https://doi.org/10.1108/17506220910970560>
- 4) Jenkins, R. (2022). China's Belt and Road Initiative in Latin America: What has Changed? *Journal of Current Chinese Affairs*, 51(1), 13–39. <https://doi.org/10.1177/18681026211047871>
- 5) Johnston L., *Understanding Demographic Challenges of Transition Through the China Lens (2021)*, The Palgrave Handbook of Comparative Economics, 10.1007/978-3-030-50888-3_26, (661-691).
- 6) Martinović, N. & Milović N., (2022). Montenegro and BRI Initiative, Opportunities and Challenges for Multinational Enterprises and Foreign Direct Investment in the Belt and Road Initiative, 10.4018/978-1-7998-8021-9.ch010, (217-233).
- 7) Mekhdiiev E., Pashkovskaya I, Takmakova, E., Smirnova O., Sadykova K., & Poltorykhina, S, (2019). Conjugation of the Belt and Road Initiative and Eurasian Economic Union: Problems and Development Prospects, *Economies*, 10.3390/economies7040118, 7, 4, (118).
- 8) Sullivan, M., Lum, T., *China's Engagement with Latin America and the Caribbean (2022)*. Congressional Research Service. Retrieved October 8, 2022, from <https://sgp.fas.org/crs/row/IF10982.pdf>.
- 9) Sun Y., Zhang K., & Zhang S. (2021). The impact of Chinese Outward Foreign Direct Investment on the comparative advantage of the Belt and Road countries, *Journal of the Asia Pacific Economy*, 10.1080/13547860.2021.1950114, 28, 3, (1251-1285).
- 10) Ray, R., & Simmons, B. A. (2020, December 7). Tracking China's Overseas Development Finance: Global development policy center. Global Development Policy Center Tracking Chinas Overseas Development Finance Comments. Retrieved October 7, 2022, from <https://www.bu.edu/gdp/2020/12/07/tracking-chinas-overseas-development-finance/>
- 11) Yiping Huang, (2016). Understanding China's Belt & Road Initiative: Motivation, framework and assessment, *China Economic Review*, Volume 40, 2016, Pages 314-321, ISSN 1043-951X,
- 12) <https://doi.org/10.1016/j.chieco.2016.07.007>.
- 13) Witt M., Lewin A., Li P, Gaur, A. (2023) Decoupling in international business: Evidence, drivers, impact, and implications for IB research, *Journal of World Business*, 10.1016/j.jwb.2022.101399, 58, 1, (101399).



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The Influence of Emotional Intelligence on Employee Engagement and Job Satisfaction through Work-Life Balance



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ABSTRACT: This research aims to examine how emotional intelligence affects employee engagement. This research also reveals the influence of emotional intelligence on job satisfaction. Work-life balance is used as a mediating variable. Purposive sampling was used to choose the 194 respondents that would make up the research sample. Data analysis utilizing SmartPLS 3.0 software was used to test the hypothesis. Findings from this research indicate that employee engagement is influenced by emotional intelligence both directly and indirectly. Additionally, job satisfaction is influenced both directly and indirectly by emotional intelligence. The findings of this research reveal that, despite each person's distinct work-life balance circumstances, emotional intelligence may be utilized to increase employee satisfaction.

KEYWORDS: emotional intelligence, employee engagement, jobs satisfaction, work-life balance

I. INTRODUCTION

An organization is established for a particular purpose. Without the assistance of competent human resources, organizations cannot simply rely on advanced technology and infrastructure. In order to accomplish organizational goals, human resources (HR) play a crucial role and often serve as the driving force behind growth (Asbari, 2019). The performance of the organization is reflected in the role that human resources contribute to the organization's sustainability.

According to Perera & L. Wijewardene (2021), the capability and desire of employees to perform better at work are the two factors that determine work performance. According to Sun et al. (2022), motivated employees demonstrate job satisfaction. Job satisfaction, in the words of Katebi et al. (2022), refers to how employees feel about their workplace and how they perceive their experiences there. Bound employees frequently claim to be content with work. This is to ensure that workers may perform enjoyable work which contributes to the success of the organization.

The extent of employee engagement in their ability to perform their work can be determined by employee engagement. Employees that are emotionally invested have been shown to increase their intellectual and psychological capacities to carry out their responsibilities in creative manners, causing them to be more productive and efficient (Panda et al., 2022). The energy produced makes workers more attentive and focused, which can be directly related to organizational goals and greater performance. Employee engagement improves employee morale and fosters a sense of motivation and loyalty among employees (Shelke & Shaikh, 2023).

The work environment and the employees' personal lives can both influence how engaged and motivated employees are at work. Employees frequently face resource and time constraints when juggling work and personal interests. Work-life balance is crucial for employees to perform at their best because it affects both their personal and professional lives (MasMachuca et al., 2016). Employees will have a balance between their personal and professional lives if they have control over the two (Sirgy & Lee, 2018). Employees are capable of fitting into both their personal and professional lives. Knowing one's own and other people's sentiments is essential for effective self-placement and for achieving work-life balance. Emotional intelligence is an approach that can be utilized to coordinate employees' duties at work and outside of work.

The development of organizations and employees is becoming more and more dependent on emotional intelligence. This issue is connected to the concept of emotional intelligence, which presents a novel approach to recognizing and evaluating a

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person's conduct, management philosophy, attitudes, social skills, and potential (Mananta, 2015). Emotional intelligence contributes to an important role in daily life, and without realizing it, emotions may determine actions, personalities, and relationships among humans. Emotional intelligence is becoming a crucial component of human resource management. According to Gentina et al. (2018), emotional intelligence has two distinct components: intrapersonal intelligence, which involves dealing with oneself, and interpersonal intelligence, which involves dealing with other people. This distinguishes individuals from other individuals, notably in terms of their disposition, motivation, attractiveness, and mood.

Research on emotional intelligence and work-life balance is rarely conducted in the Karawang Industrial Area, where the number of employees is quite likely to be used as a subject of human resource research. Additionally, according to the Karawang Regency government's website, up to 36,380 prospective employees were hired in Karawang in 2019. The fact that Karawang has the capacity for research is demonstrated by the dozens of new hires each year. Through job satisfaction, this research aims to improve the variables that impact employee performance.

A. The Influence of Emotional Intelligence on Work-Life Balance

Achieving an adequate balance between work and activities outside of work depends on emotional intelligence. According to Malik et al. (2019), emotional intelligence enables employees to strike a balance between work and personal interests. Additionally, Moghaddam et al.'s research (2022) found a significant correlation between emotional intelligence and work-life balance. Given that this assertion is consistent with research by Bakir (2018) and Nurjanah & Indawati (2021), which found a positive correlation between emotional intelligence and work-life balance, the following formulation of the hypothesis is as follows:

H1: Emotional intelligence has a positive influence on work-life balance.

B. The Influence of Emotional Intelligence on Employee Engagement

Employees who possess high levels of emotional intelligence tend to be calm, confident, adept at paying attention and have stronger bonds with fellow employees. An employee is capable of doing all of the duties without experiencing excessive stress. Additionally, emotional intelligence is the capacity to maintain enthusiasm in the face of a variety of difficulties associated with employee engagement and self-motivation (Sari & Yulita, 2018). Employee engagement may rise as an impact of emotional intelligence dimensions (Barreiro & Treglown, 2020). The research conducted by Nurjanah & Indawati (2021) on the impact of emotional intelligence on employee engagement reveals a favorable relationship. According to research carried out by Karamustafa & Kunday (2018), Sari & Yulita (2018), and Tjiabrata et al. (2021), there is a marginally favorable relationship between employee engagement and emotional intelligence. Therefore, the following formulation of the hypothesis is possible:

H2: Emotional intelligence has a positive influence on employee engagement.

C. The Influence of Emotional Intelligence on Job Satisfaction

Job satisfaction is positively influenced by emotional intelligence (Choi et al., 2021). An individual with strong emotional intelligence attempts to positively transform and retain feelings even in terrible emotional states, enhancing job satisfaction. Emotional intelligence involves the ability to manage one's emotions. Employee job satisfaction is influenced by emotional intelligence, according to research carried out by Mandala & Dihan (2018). Similar findings were made by Argon & Liana (2020), who analyzed data from 117 respondents from PT Digital Network Venture Indonesia in their research. They found that emotional intelligence had a positive and significant impact on job satisfaction. Emotional intelligence has a favorable impact on job satisfaction (Choi et al., 2021; Nurjanah & Indrawati, 2021). Therefore, the hypothesis is formulated as follows:

H3: There is a positive influence of emotional intelligence on job satisfaction.

D. The Influence of Work-Life Balance on Employee Engagement

Employee engagement can also be impacted by work well-being (Larasati et al., 2019). Social exchange theory can be used to describe the correlation between employees and work-life balance. According to this view, giving, making sacrifices, and reaping advantages each play a role in social relationships. Employee engagement will be at a high level if an employee feels valued and the organization encourages a healthy balance between work and personal life. Work-life balance has an impact on employee engagement, as demonstrated by research conducted in Vietnam and Indonesia (Dinh, 2020; Fazlurrahman et al., 2020). Research conducted by Jaharuddin & Zainol (2019); Nurjanah & Indawati (2021) revealed that there is an influence of work-life balance on employee engagement. Thus the hypothesis is formulated as follows:

H4: There is a positive influence of work-life balance on employee engagement.

E. The Influence of Work-Life Balance on Job Satisfaction

Employees may generate harmonious relationships both inside and outside of the organization when they are satisfied with what they do (Choi et al., 2021). Work-life balance has been linked to higher levels of job satisfaction, according to numerous

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researches. Work-life balance has an impact on employee job satisfaction, according to Australian finance employees' research (Talukder et al., 2018). Work-life balance raises job satisfaction, according to research by Astuti (2019) and Riffay (2019), both of which were conducted in Indonesia involving different research subjects. Similar to Purwanto et al. (2020), who found a favorable correlation between job satisfaction and work-life balance in the Riau Islands Municipal Police. Therefore, according to Nurjanah and Indawati (2021), work-life balance has a big impact on job satisfaction. Work-life balance, according to (Sari et al., 2021), has an impact on job satisfaction. This data allows for the following conclusion to be made about the hypothesis:
H5: Work-life balance has a positive influence on job satisfaction.

F. The Influence of Employee Engagement on Job Satisfaction

Reissová & Papay (2021) analyzed call center employees in large companies and discovered a significant relationship between job satisfaction and employee engagement. Employee engagement has an influence on job satisfaction, according to research conducted within the United States (Im, 2022). According to the research carried out by Alagarsamy et al. (2020), job satisfaction can be significantly predicted by employee engagement. Researchers Abolnasser et al. (2023) and Hakro et al. (2022) found instances in which job satisfaction is influenced by employee engagement. According to the description provided above, the hypothesis which can be examined is:

H6: Employee engagement has a positive influence on job satisfaction.

G. The Influence of Emotional Intelligence on Employee Engagement with Work-Life Balance Mediation

Employee engagement is a positive emotional state that results from the fulfilment of personal well-being and satisfaction at work, accompanied by high involvement in activities. Employees that possess high levels of emotional intelligence tend to be self-aware and capable of managing how they interact with others and with themselves. Additionally, it is crucial for employees to strike a balance between their personal and professional lives (Marseno & Muafi, 2021). Work-life balance has a considerable positive influence when mediating the role of emotional intelligence on employee engagement, according to research by Nurjanah & Indawati (2021). Thus, the following statement may be drawn about the hypothesis:

H7: Work-life balance mediates the positive influence of emotional intelligence on employee engagement.

H. The Influence of Emotional Intelligence on Job Satisfaction with Work-Life Balance Mediation

Any circumstance involving physical, psychological, and environmental factors that encourage employees to express sentiments of job enjoyment is referred to as a condition of job satisfaction. Job satisfaction might also reveal to what extent an employee is stressed out due to their personal and professional lives need to be balanced. The relationship arises from the fact that employees are more content with their professions as their work lives grow more structured. Therefore, research has shown that work-life balance improves job satisfaction, which in turn increases productivity at work and necessitates the support of both management and employees' families (Qasim et al., 2020). As there is no statistically significant correlation between emotional intelligence and job happiness, work-life balance could be properly mediated (Nurjanah & Indrawati, 2021). The hypotheses that can be employed are as follows in light of the above explanation:

H8: The positive influence of emotional intelligence on job satisfaction is mediated by work-life balance.

II. METHOD

The cross-sectional method is used to collect data over a specific time period. Numerous individual employees in Karawang synthetic rubber factory serve as the research's unit of analysis. There are four variables total in this study: 1 independent, 1 mediating, and 2 dependent. Employee engagement and job satisfaction are the dependent variables (Y) in this study, whereas emotional intelligence is the independent variable (X), and work-life balance is the mediating variable (Z). An interval scale with a Likert measurement scale of 5 points was used to evaluate the responses provided by respondents, ranging from "strongly disagree" on a scale of 1 to "strongly agree" on a scale of 5. One hundred ninety-four respondents were obtained through the use of a Google Form for primary data collection. The data was then processed using the software SmartPLS 3.0.

III. RESULTS

A. Test Research Instrument

The validity test determines whether the instrument (statement) accurately represents the variable of research. A questionnaire is deemed valid when the statements on it may be used to identify the data it is intended to evaluate. The loading factor serves to determine the validity of a statement. The relationship between variables and their factors is represented by the loading factor (Hair et al., 2019). A sample size of 194 was used in this research with a loading factor of 0.45. Should the loading factor be greater than or equal to 0.45, the instrument is considered to be valid.

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Table I. Validity Test on Emotional Intelligence

Statements	Loading Factor	Results
I fully understand why I frequently experience certain emotions	0,721	Valid
I possess an ideal understanding of personal emotions	0,689	Valid
I completely understand how I feel	0,536	Valid
I always know whether I am happy or otherwise	0,578	Valid
I always establish personal goals for myself and work hard to achieve them	0,584	Valid
I have always believed in being competent	0,660	Valid
I am a motivated person	0,710	Valid
I always encourage myself to do my best	0,651	Valid
I can always tell what emotions my co-workers are feeling based on how they behave	0,742	Valid
I am a good observer of my co-workers' emotions	0,671	Valid
I am attentive to my co-workers' emotions and feelings	0,616	Valid
I have a good understanding related to the emotions of people around me	0,661	Valid
I have emotional control and am able to deal with difficulties rationally	0,734	Valid
I am capable of maintaining my emotions under control	0,716	Valid
I can always calm down immediately when I am angry	0,629	Valid
I have good emotional control over myself	0,732	Valid

Source: Questionnaire data examined using SmartPLS (2023)

According to the validity test on the emotional intelligence variable, 16 statements have been declared valid because their factor loading is more than 0.45. The 16 statements in this variable can then be carried over to the next test.

Table II. Validity Test on Employee Engagement

Statements	Loading Factor	Results
I focus on my work	0,772	Valid
I concentrate on my work	0,792	Valid
I pay much attention to work	0,814	Valid
I share the same work values with my co-workers	0,702	Valid
I share the same work objectives with my co-workers	0,750	Valid
I share the same work mindset with co-workers	0,620	Valid
I am positive about my work	0,677	Valid
I feel energized at work	0,684	Valid
I am enthusiastic at work	0,762	Valid

Source: Questionnaire data examined using SmartPLS (2023)

According to the validity test on the emotional intelligence variable, 9 statements have been declared valid because their factor loading is more than 0.45. The 9 statements in this variable can then be carried over to the next test.

Table III. Validity Test on Work-Life Balance

Statements	Loading Factor	Results
I currently maintain a proper balance between time spent at work and time spent on personal life activities	0,774	Valid
I have no difficulties balancing my professional and personal lives	0,810	Valid
I believe that the balance between work demands and personal life activities is ideal	0,820	Valid
Overall, I believe that my professional and personal lives are in balance	0,785	Valid

Source: Questionnaire data examined using SmartPLS (2023)

According to the validity test on the emotional intelligence variable, 4 statements have been declared valid because their factor loading is more than 0.45. The 4 statements in this variable can then be carried over to the next test. The reliability test examines the research instrument's stability, reliability, and accuracy. A measure with high reliability is one that can produce reliable findings. The reliability test can be concluded using Cronbach's Alpha with scores greater than or equal to 0.60, according to Hair et al. (2019). Cronbach's Alpha scores greater than or equal to 0.60 indicate that the statement is reliable.

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Table IV. Cronbach's Alpha Value

Variables	Number of Indicators	Cronbach's Alpha	Information
EI	16	0.868	Reliable
WLB	4	0.809	Reliable
EE	9	0.875	Reliable
JS	6	0.893	Reliable

Source: Questionnaire data examined using SmartPLS (2023)

In the table above, the results of reliability testing with Cronbach's Alpha analysis demonstrate that Cronbach's Alpha value for all constructs is greater than 0.6, indicating that all constructs are reliable. SmartPLS 3.0 software was employed in this research, and the approach used was the feasibility of a structural model. The model feasibility test in this software uses the inner model, which specifies the relationship between variables based on substantive theory. The inner model utilizes the R-square value. R-square is used to examine the independent variables' substantive effect on the dependent variable. The R-Square approach is used to measure the structural model in this study. Table 5 displays the R-Square results for each variable.

Table V. R-Square Value

Variables	R-Square
WLB	0,651
EE	0,736
JS	0,673

Source: Questionnaire data examined using SmartPLS (2023)

The R-Square value for the employee engagement construct is 0.736, according to the test results. The R-square value identifies emotional intelligence and work-life balance variables that have a 73.6% influence on employee engagement. The R-square value for the work-life balance variable is the same as well. According to Table 20, emotional intelligence influences work-life balance by 65.1%, whereas job satisfaction explains emotional intelligence and work-life balance by 67.3%.

B. Description of Research Data

Respondent profiles of synthetic rubber industry employees in Karawang are presented in the table below:

Table VI. Gender of the Respondents

Profile	Information	Frequency	Percentage (%)
Gender	Male	151	77,8
	Female	43	22,2
	Total	194	100

Source: Questionnaire data examined using SmartPLS (2023)

Table 6 compares the number of male and female employees who participated in filling out the questionnaire. Male employees outnumber female employees. Male employees constituted the majority of 151 respondents (77.8%), while female employees were represented by 43 respondents (22.2%). This could be due to the company's location, which is difficult to reach from downtown; therefore, most women may be hesitant to work there. Furthermore, because the production process involves heavy equipment, this car tire manufacturing company requires male employees.

Table VII. Age of The Respondents

Profile	Information	Frequency	Percentage (%)
Age	< 25	16	8,2
	25 – 30	31	16
	>30 – 35	29	14,9
	>35 – 40	69	35,6
	>40 – 45	9	4,6
	>45	40	20,6
	Total	194	100

Source: Questionnaire data examined using SmartPLS (2023)

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Table 7 shows employees aged less than 25 years consisting of 16 respondents (8.2%), ages between 25 to 30 years of 31 respondents (16%), ages >30 to 35 years consisting of 29 respondents (14.9%) , ages >35 to 40 years had the highest number of employees who filled out the questionnaire as many as 69 respondents (35.6%), ages >40 – 45 years had the least number of employees filling out the questionnaire as many as 9 respondents (4.6%), and ages employees who are more than 45 years old consist of 40 respondents (20.6%). The dominance of respondents aged >35-40 years might be caused by the company's location in Karawang, where a considerable distance from the city center may be less appealing for young people, so the generation aged >35 years still dominates.

Table VIII. Latest Education of The Respondents

Profile	Information	Frequency	Percentage (%)
Latest Education	High school diploma	48	24,7
	Associate degree	23	11,9
	Bachelor's degree	105	54,1
	Master's degree	18	9,3
	Total	194	100

Source: Questionnaire data examined using SmartPLS (2023)

Table 8 reveals that employees with Bachelor's degrees outnumber those with other levels of education, with 105 respondents (54.1%), while Master's degrees have the fewest (18 respondents (9.3%). The Master's degree receives the biggest presentation because it is required of all employees of the company in this industry.

C. Hypothesis Test

In this research, the p-value approach is used to test the hypothesis. The coefficients and p-values of eight hypotheses were examined. Table 9 displays the results of the data analysis.

Table XI. Hypothesis Test Results

No	Research Hypothesis	Coefficient	p-Value	Results
H1	Emotional intelligence has a positive influence on work-life balance	0,807	0,000	H1 is supported
H2	Emotional intelligence has a positive influence on employee engagement	0,517	0,000	H2 is supported
H3	Emotional intelligence has a positive influence on job satisfaction	0,222	0,021	H3 is supported
H4	Work-life balance has a positive influence on employee engagement	0,384	0,000	H4 is supported
H5	Work-life balance has a positive influence on job satisfaction	0,176	0,035	H5 is supported
H6	Employee engagement has a positive influence on job satisfaction	0,472	0,000	H6 is supported
H7	Work-life balance mediates the positive influence of emotional intelligence on employee engagement	0,310	0,000	H7 is supported
H8	Work-life balance mediates the positive influence of emotional intelligence on job satisfaction	0,142	0,000	H8 is supported

Source: Questionnaire data examined using SmartPLS (2023)

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According to Hair et al. (2019), the p-value indicates the influence between variables. The hypothesis is supported when the p-value is less than 0.05 ($\alpha=5\%$). The test results in Table 9 reveal a p-value of 0.000 0.05, implying that the eight hypotheses are statistically supported with a p-value less than 0.05.

IV. DISCUSSION

A. The Influence of Emotional Intelligence on Work-Life Balance

The hypothesis test results demonstrate that emotional intelligence has a positive influence on work-life balance. Other previous research supports the same findings. Bakir (2018) and Moghaddam et al. (2022) carried out research on the influence of emotional intelligence on work-life balance in hospital staff. According to Nurjanah and Indawati's (2021) and Praya et al.'s (2019) research, emotional intelligence contributes to improving work-life balance.

Employees with high emotional intelligence can control their feelings toward their surroundings, which can help them attain work-life balance. When the company's policies are not in favor of the employee's work-life balance, employees can control their feelings so that they do not fall into unsupportive circumstances. Employees, on the other hand, can concentrate more on what they can do to achieve a work-life balance in their lives. Each employee may have varied perspectives on how to adopt work-life balance based on the facts of their own lives. As a result, emotional intelligence in employees becomes a factor in managing behaviors and emotions in order to attain work-life balance.

B. The Influence of Emotional Intelligence on Employee Engagement

According to the second hypothesis, emotional intelligence has a significant influence on employee engagement. Several prior types of research confirm this finding as well. Employee engagement is significantly influenced by the aspects of self-management and social awareness of emotional intelligence, according to Karamustafa and Kunday (2018). Similarly, Barreiro and Treglown (2020) discovered that employee emotional intelligence may improve employee engagement. This finding is further supported by prior research by Nurjanah and Indawati (2021) and Tjiabrata et al. (2021). According to both research, emotional intelligence has an impact on employee engagement.

Employee emotional intelligence has an impact on self-emotion management, which leads to better organizational objectives. Employees in this situation are influenced by numerous aspects in accomplishing organizational objectives, such as relationships between employees. Employees' emotional intelligence is essential in the context of interpersonal relationships. Every employee must possess social and emotional abilities in order to sustain relationships and interact with fellow co-workers. Employees' intrapersonal abilities are reflected in their interactions with other employees, and emotional intelligence plays a part in controlling oneself in social circumstances. Therefore, it becomes essential for employees to develop emotional intelligence in order to increase employee engagement.

C. The Influence of Emotional Intelligence on Job Satisfaction

The findings indicate that hypothesis 3 is supported. According to Hypothesis 3, emotional intelligence has a positive influence on job satisfaction. Argon and Liana's (2020) research backs up the findings of testing hypothesis 3, which claimed that emotional intelligence has significant effects on employee satisfaction in a prior study of 117 employees of PT Digital Network Venture Indonesia. Choi et al. (2019) conducted research at medical institutes in Gyeonggi and found that emotional intelligence has a positive correlation with job satisfaction. Furthermore, research conducted by Nurjanah and Indawati (2021) supports this hypothesis by demonstrating that emotional intelligence has a significant effect on employee job satisfaction.

Employees' interpersonal and intrapersonal skills are influenced by emotional intelligence. The feeling of satisfaction or sense of accomplishment that employees obtain from their work. It takes the ability to understand oneself and behave adaptively depending on one's abilities and weaknesses to achieve job satisfaction. This ability is known as intrapersonal ability. Employees will be satisfied with their work if they enjoy it. Intrapersonal abilities derived from emotional intelligence are required to find such enjoyment.

D. The Influence of Work-Life Balance on Employee Engagement

Based on the findings of the data testing, hypothesis 4 is supported, stating that work-life balance has a positive influence on employee engagement. According to Pangeri's (2020) research in Samarinda, there is a significant impact of work-life balance on employee engagement; hence this statement supports the results of hypothesis 4. Jaharuddin and Zainol (2019) conducted similar research in Malaysia. The findings of the research revealed a direct relationship between work-life balance and employee engagement. Nurjanah and Indawati (2021) conducted further research that supports this hypothesis, demonstrating that work-life balance has an effect on employee engagement.

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Employees that have no trouble balancing work and personal life activities will be more optimistic, energetic, and enthusiastic at work. Social exchange theory can be applied to the phenomena of work-life balance provided by companies to their employees. Employees will respond with a high level of engagement when they feel cared for, and the company promotes balancing personal life and work. As a result, work-life balance improves employee engagement.

E. The Influence of Work-Life Balance on Job Satisfaction

Based on the test results, Hypothesis 5 is supported, indicating that work-life balance has a positive influence on job satisfaction. This hypothesis is supported by several prior research. According to Purwanto et al. (2020), there is a positive correlation between work-life balance and job satisfaction in the Riau Islands Municipal Police, for instance. Job satisfaction rises as work-life balance improves (Astuti, 2019; Riffay, 2019). Nurjanah and Indawati (2021) discovered that work-life balance has a positive influence on job satisfaction.

Employees have limited time and are expected to make the most of it. The limited time is used for more than work. Employees also need time to attend to their own needs and interests, which include family, parents, and even friends. Employees that have no issue managing job duties and personal lives will find work enjoyable. Employees who have enough time for both lives are more likely to do their responsibilities to the best of their abilities. Work-life balance may also prevent people from becoming bored when dealing with work that takes up too much of their time. As a result, work-life balance has an influence on job satisfaction.

F. The Influence of Employee Engagement on Job Satisfaction

Based on the findings of the data testing, hypothesis 6 is supported, saying that employee engagement has a positive influence on job satisfaction. According to research conducted on NGO employees in Sindh Province by Hakro et al. (2022), it validates the conclusions of hypothesis 6, which states that employee engagement has tested positive and has a significant impact on job satisfaction. Abolnasser et al. (2023) completed additional research on the frontline employees of 5-star hotels in Riyadh, Jeddah, and Mecca. According to the findings of this research, employee engagement has a considerable positive effect on job satisfaction.

Employee engagement in the company, both in terms of work and work environment, will have an impact on these employees' job satisfaction. Employees who are highly engaged will learn more, respond more quickly, and be more adaptable to change. Employee engagement encourages employees to be motivated and devoted to the company, resulting in higher job satisfaction. As a result, employee engagement improves job satisfaction.

G. The Influence of Emotional Intelligence on Employee Engagement with Work-Life Balance Mediation

Based on the findings of the data testing, hypothesis 7 on work-life balance mediating the positive effect of emotional intelligence on employee engagement is supported, with a p-value less than 0.05. There has not been much research conducted regarding the mediating effect of work-life balance on emotional intelligence on employee engagement. According to Nurjanah and Indawati's (2021) research, work-life balance has a significant positive influence when it comes to moderating the effect of emotional intelligence on employee engagement.

Based on this, it is discovered that work-life balance may slightly mediate the influence of emotional intelligence on employee engagement. This demonstrates not only that work-life balance has a significant influence on employee engagement as a dependent variable yet also that emotional intelligence has a direct effect on employee engagement as an independent variable. According to Hypothesis 7, employee engagement could be increased by creating harmony between employees' personal and professional life. Employees with solid emotional management abilities are better able to achieve this alignment.

Employees who have high emotional intelligence will be able to interact with their surroundings. Employees with high emotional intelligence can manage their emotions appropriately. Furthermore, by analyzing the feelings of the surroundings, this emotional management talent may manage social relationships with co-workers, leaders, and followers. Individuals with a good work-life balance are happier because they can balance their job duties with their personal lives. Employees that are happy find it easier to form relationships with their co-workers, which leads to higher levels of engagement. Work-life balance allows employees to be content with their jobs and feel compelled to participate in the company.

H. The Influence of Emotional Intelligence on Job Satisfaction with Work-Life Balance Mediation

Based on the results of the data testing, hypothesis 8 regarding work-life balance mediating the positive influence of emotional intelligence on job satisfaction is supported, with a p-value less than 0.05. There has not been much study regarding the mediating influence of work-life balance on emotional intelligence and job satisfaction. According to Nurjanah and Indawati's (2021) research, work-life balance has a significant positive effect when it involves mediating the influence of emotional intelligence on job satisfaction.

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Based on this, it has been found that work-life balance may slightly mediate the influence of emotional intelligence on job satisfaction. This demonstrates that there is not only an indirect effect of work-life balance on job satisfaction yet also a direct effect of emotional intelligence on job satisfaction. According to hypothesis 8, job satisfaction is determined by employees' ability to balance their personal and professional lives. Employees with good emotional management abilities can optimize this balance.

One dimension of emotional intelligence describes employees' ability to direct their emotions to productive activity through self-motivation. This relates to the employee's ability to manage their emotions in order to recover from psychological stress. Employees with the ability to manage emotions are able to think rationally to determine priorities in work life and life outside of work (personal, family, and friends), which is an antecedent of work-life balance. Employees will feel physically and emotionally exhausted if they lack the ability to manage priorities. Work-life balance is important for mental health and stress reduction. Furthermore, an appropriate balance between work and life will improve job satisfaction and employee productivity.

V. CONCLUSION

The research has been formulated into eight hypotheses, and the findings reveal that all of them are supported. The research found that emotional intelligence has a direct influence on employee engagement and job satisfaction and that this causal relationship can also be mediated by work-life balance. In detail, the research's findings indicate that emotional intelligence has a positive influence on work-life balance. Employees with high emotional intelligence will find it easier to balance their personal and professional lives. Emotional intelligence has a positive effect on employee engagement. Employees that have effective emotional management will have effortless interpersonal relationships with their co-workers, which will increase their employee engagement. The level of job satisfaction is positively influenced by emotional intelligence. Employees with high emotional intelligence are more likely to be satisfied with their jobs. Work-life balance has a positive effect on employee engagement. Employees that maintain an appropriate work-life balance will become more engaged in their workplace. Work-life balance has a positive effect on job satisfaction. Employees with work-life balance are happier and more prepared to confront challenges at work, which increases job satisfaction. Employee engagement has a positive effect on job satisfaction. Employees who are actively engaged in the company will be more satisfied with their jobs. The positive effect of emotional intelligence on employee engagement is mediated by work-life balance. Employees with high emotional intelligence with a strong work-life balance will be more involved in their workplace. Work-life balance mediates the positive influence of emotional intelligence on job satisfaction. Employees with high emotional intelligence and a healthy work-life balance will be better prepared to carry out their responsibilities which results in job satisfaction.

REFERENCES

- 1) Abolnasser, M. S. . A., Abdou, A. H., Hassan, T. H., & Salem, A. E. (2023). Transformational Leadership, Employee Engagement, Job Satisfaction, and Psychological Well-Being among Hotel Employees after the Height of the COVID-19 Pandemic: A Serial Mediation Model. *International Journal of Environmental Research and Public Health*, 20(4), 1–27. <https://doi.org/https://doi.org/10.3390/ijerph20043609>
- 2) Alagarsamy, S., Mehroliya, S., & Aranha, R. H. (2020). The Mediating Effect of Employee Engagement: How Employee Psychological Empowerment Impacts the Employee Satisfaction? A Study of Maldivian Tourism Sector. *Global Business Review*, 1–19. <https://doi.org/https://doi.org/10.1177/0972150920915315>
- 3) Argon, B., & Liana, Y. (2020). Kecerdasan Emosional Terhadap Komitmen Organisasi Melalui Kepuasan Kerja. *Aktiva: Jurnal Akuntansi Dan Investasi*, 4(1), 1–14.
- 4) Asbari, M. (2019). Pengaruh kepemimpinan transformasional dan iklim organisasi terhadap kinerja dosen. *JOCE IP*, 13(2), 172–186.
- 5) Astuti, A. K. (2019). Peranan Dukungan Supervisor Pada Keseimbangan Kehidupan Kerja Dan Kepuasan Karyawan. *Jurnal Riset Manajemen Dan Bisnis*, 14(1). <https://doi.org/https://doi.org/10.21460/jrmb.2019.141.312>
- 6) Bakir, S. M. A. (2018). The Impact of Managers' Emotional Intelligence on Employees' Work-Life Balance: A Field Study at Jordanian Private Hospitals. *European Scientific Journal (ESJ)*, 14(25). <https://doi.org/https://doi.org/10.19044/esj.2018.v14n25p256>
- 7) Barreiro, C. A., & Treglown, L. (2020). What makes an engaged employee? A facet-level approach to trait emotional intelligence as a predictor of employee engagement. *Personality and Individual Differences*, 159, 1–8. <https://doi.org/https://doi.org/10.1016/j.paid.2020.109892>
- 8) Choi, E., Ph, D., & Service, K. (2021). A Study on the Effect of Perceived Emotional Intelligence of Members on Self-Efficacy and Job Satisfaction. *İlköğretim Online*, 20(3), 1254–1262.

The Influence of Emotional Intelligence on Employee Engagement and Job Satisfaction through Work-Life Balance

<https://doi.org/10.17051/ilkonline.2021.03.140>

- 9) Choi, H. M., Mohammad, A. A. A., & Kim, W. G. (2019). Understanding hotel frontline employees' emotional intelligence, emotional labor, job stress, coping strategies and burnout. *International Journal of Hospitality Management*, 82, 199–208. <https://doi.org/10.1016/j.ijhm.2019.05.002>
- 10) Dinh, L. N. (2020). Determinants of employee engagement mediated by work-life balance and work stress. *Management Science Letters*, 10(4), 923–928. <https://doi.org/10.5267/j.msl.2019.10.003>
- 11) Fazlurrahman, H., Wijayati, D. T., Hadi, H. K., Rahman, Z., Nugrohoseno, D., & Rahman, M. F. W. (2020). Analysis of work engagement measurement at work from home due to the effect of Covid-19 pandemic. *Technium Social Sciences Journal*, 14, 363–375.
- 12) Gentina, E., Tang, T. L. P., & Dancoine, P. F. (2018). Does Gen Z's emotional intelligence promote iCheating (cheating with iPhone) yet curb iCheating through reduced nomophobia? *Computers and Education*, 126, 231–247. <https://doi.org/10.1016/j.compedu.2018.07.011>
- 13) Hair, J. F., Anderson, R., Tatham, R., & Black, W. (2019). *Eight Edition Multivariate Data Analysis*.
- 14) Hakro, T. H., Siddiqui, M. B., & Banbhan, A. A. (2022). RJSSER Investigating the Relationship of Talent Management on Employee Performance, Employee Engagement and Job Satisfaction. *Research Journal of Social Sciences & Economics Review*, 3, 2707–9015. <https://doi.org/10.36902/rjsser-vol3-iss3-2022>
- 15) Im, H. (2022). Come Work with Us: Inclusivity, Performance, Engagement, and Job Satisfaction as Correlates of Employer Recommendation. *Journal of Personnel Psychology*, 21(4), 208–214. <https://doi.org/10.1027/1866-5888/a000305>
- 16) Jaharuddin, N. S., & Zainol, L. N. (2019). The Impact of Work-Life Balance on Job Engagement and Turnover Intention. *The South East Asian Journal of Management*, 13(1). <https://doi.org/10.21002/seam.v13i1.10912>
- 17) Karamustafa, E. Y., & Kunday, O. (2018). The Relationship Between Emotional Intelligence and Employee Engagement with the Moderating Role of Gender. *International Journal of Economics, Business and Management Research*, 2(02), 586–603.
- 18) Katebi, A., HajiZadeh, M. H., Bordbar, A., & Salehi, A. M. (2022). The Relationship Between “Job Satisfaction” and “Job Performance”: A Meta-analysis. *Global Journal of Flexible Systems Management*, 23(1), 21–42. <https://doi.org/10.1007/s40171-021-00280-y>
- 19) Larasati, D. P., Hasanati, N., & Istiqomah. (2019). The Effects of Work-Life Balance towards Employee Engagement in Millennial Generation. *Proceedings of the 4th ASEAN Conference on Psychology, Counselling, and Humanities (ACPCH 2018)*. <https://doi.org/10.2991/acpch-18.2019.93>
- 20) Malik, M., Haider, Z., & Hussain, A. (2019). Perceived Emotional Intelligence, Work-Life Balance and Job Satisfaction. *International Journal of Pharmaceutical Research & Allied Sciences*, 8(2), 80–86.
- 21) Mananta, M. (2015). Exploring the Relationship Between Emotional Intelligence and Work-Life Balance in the Service Industry. *IUP Journal of Organizational Behavior*, 14(2), 42–60.
- 22) Mandala, E. A., & Dihan, F. N. (2018). Spiritual pada Kepuasan Kerja yang Berdampak terhadap Kinerja Karyawan PT. Madu Baru Bantul Yogyakarta. *Jurnal Kajian Bisnis*, 26(1), 13–28.
- 23) Marseno, W. A., & Muafi, M. (2021). The effects of work-life balance and emotional intelligence on organizational commitment mediated by work engagement. *International Journal of Business Ecosystem & Strategy (2687-2293)*, 3(2), 01–15. <https://doi.org/10.36096/ijbes.v3i2.257>
- 24) MasMachuca, M., BerbegalMirabent, J., & Alegre, I. (2016). Journal of Managerial Psychology Worklife balance and its relationship with organizational pride and job satisfaction. *Journal of Managerial Psychology*, 31(2), 1–18. <https://doi.org/10.1108/JMP0920140272>
- 25) Moghaddam, S. A., Tavakoli, A. M., Salajegheh, S., Mehdizadeh, S., & Shokoh, Z. (2022). Work-life balance in nurses working in hospital: a model with the mediating role of emotional intelligence. *Social Determinants of Health*, 8(1), 1–12.
- 26) Nurjanah, D., & Indrawati, N. (2021). Effect of Emotional Intelligence on Employee Engagement and Job Satisfaction with Work-Life Balance as Intervening Variables in The Generation Z in Surabaya. *International Journal of Economics, Management, Bussiness and Social Science*, 1(3), 316–328. <https://doi.org/10.1007/s40171-021-00280-y>
- 27) Pangeri, R. (2020). Keseimbangan Kehidupan Kerja dan Manajemen Stres Terhadap Keterikatan Karyawan Pada Karyawati. *Psikoborneo: Jurnal Ilmiah Psikologi*, 8(4), 620. <https://doi.org/10.30872/psikoborneo.v8i4.5568>

The Influence of Emotional Intelligence on Employee Engagement and Job Satisfaction through Work-Life Balance

- 28) Perera, G. D. N., & L., W. (2021). Work Life Balance on Job Performance in Selected Sri Lankan Banks. *Journal of Management Sciences & Education*, 10(1), 20–27.
- 29) Praya, S. M. J., Ghosh, A., Isaac, O., Jesuraj, S. A. V., & Ameen, A. (2019). The Impact of Emotional Intelligence on Work Life Balance among Pharmacy Professionals in Malaysia. *International Journal of Management and Human Science*, 3(1), 29–34.
- 30) Purwanto, E. H., Saputra, E. K., & Risnawati. (2020). Pengaruh Keseimbangan Kehidupan Kerja Terhadap Kepuasan Kerja Anggota Satuan Polisi Pamong Praja Provinsi Kepulauan Riau. *Jurnal Manajerial Dan Bisnis Tanjungpinang*, 3(1), 72–79.
- 31) Qasim, M., Khaskhely, M., & Pitafi, A. (2020). Evaluating the Mediating Effect of Work-Life Balance between Emotional Intelligence and Job Satisfaction in Corporate Sector. *European Journal of Business and Management Research*, 5(6), 1–6. <https://doi.org/https://doi.org/10.24018/ejbmr.2020.5.6.594>
- 32) Reissová, A., & Papay, M. (2021). Relationship between Employee Engagement, Job Satisfaction and Potential Turnover. *TEM Journal*, 10(2), 847–852. <https://doi.org/https://doi.org/10.18421/TEM102-44>
- 33) Riffay, A. (2019). Pengaruh Keseimbangan Kehidupan Kerja (Work Life Balance) dan Kepuasan Kerja Terhadap Komitmen Organisasi Guru SD Negeri di Kecamatan Kota Masohi. *Jurnal Ilmiah Wahana Pendidikan*, 5(3), 39–47. <https://doi.org/https://doi.org/10.5281/zenodo.3360415>
- 34) Sari, I. P., Agussalim, M., & Adawiyah, D. (2021). PENGARUH KESEIMBANGAN KEHIDUPAN KERJA TERHADAP KEPUASAN KERJA PEGAWAI BADAN PENANGGULANGAN BENCANA DAERAH KOTA PADANG. *Jurnal Matua*, 3(4), 618–631.
- 35) Sari, T., & Yulita, H. (2018). Kecerdasan Emosional dan Modal Psikologis. *Sustainable Tourism Industry of Economic Development*, 5–6.
- 36) Shelke, A. U., & Shaikh, N. (2023). Mediating role of workplace happiness in enhancing work engagement. *Rajagiri Management Journal*. <https://doi.org/https://doi.org/10.1108/ramj-07-2022-0110>
- 37) Sirgy, M. J., & Lee, D. J. (2018). Work-Life Balance: An Integrative Review. *Applied Research in Quality of Life*, 13(1), 229–254. <https://doi.org/https://doi.org/10.1007/s11482-017-9509-8>
- 38) Sun, J., Wang, C. C., Yang, Z., Yu, T., Li, J., & Xiong, X. (2022). Impact of organizational decentralization degree on job satisfaction and job performance: a hierarchical linear model analysis for construction projects. . . *Engineering, Construction and Architectural Management*, 29(4), 1642–1660. <https://doi.org/https://doi.org/10.1108/ECAM-07-2020-0503>
- 39) Talukder, A., Vickers, M., & Khan, A. (2018). Supervisor support and work-life balance: impacts on job performance in the Australian financial sector. *Emerald Insight*, 47(3), 727–744. <https://doi.org/https://doi.org/doi.org/10.1108/PR-12-2016-0314>
- 40) Tjiabrata, W., Lengkong, V. P. K., & Sendow, G. M. (2021). Pengaruh Kecerdasan Emosional, Kualitas Kehidupan Kerja Dan Kebahagiaan Di Tempat Kerja Terhadap Keterikatan Karyawan Pada PT PLN (Persero) Up3 Manado. *Jurnal Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi*, 9(2), 458–468. <https://doi.org/https://doi.org/10.35794/emba.v9i2.33518>



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The Effect of Egg Yolk on the Physical and Organoleptic Properties of Mayonnaise from Virgin Coconut Oil and Coconut Water



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ABSTRACT: Mayonnaise is a semi-solid food ingredient produced by mixing vegetable oil with an emulsifier consisting of vinegar and egg yolks, and sugar or salt can also be added to taste. The purpose of this study was to evaluate the effect of egg yolk on the physical and organoleptic properties of mayonnaise made of virgin coconut oil (VCO) and coconut water. Mayonnaise is typically produced by mixing egg yolk (0, 5, 7, 9, 11) %, salt, sugar, xanthan gum, mustard, lime, coconut water and VCO (coconut water : VCO ratio = 4:1). Furthermore, homogenization was carried out using ultra turrax for 4 minutes at 15000 rpm until mayonnaise was formed. Analysis was carried out on viscosity, stability, organoleptic tests (color, taste, aroma, and texture) and chemical tests (moisture/water content, fat content, and protein content) as well as total plate number. The results showed that mayonnaise made of virgin coconut oil had stable properties. The highest viscosity value was 1040 cP in the concentration of 7% egg yolk. An increase in egg yolk content decreases the viscosity of mayonnaise. In organoleptic testing, it was found that the combination of coconut water and 7% egg yolk had a neutral preference for taste. For the color aspect, the results found were included in the like category, while for the aroma aspect, the results was included in the neutral category. The result found was classified as like for texture aspect. When compared to SNI 01-4473-1998, mayonnaise with a combination of coconut water and 7% egg yolk had a water content of 76.75% higher than SNI (max 30%), fat content 12.49% lower than SNI (min 65%), protein content 2.21% meets SNI requirements (min 0.9%), and total plate count (TPC) 2.7×10^2 colonies/gr meets SNI standards (max 1×10^4 colonies/g). Therefore, the mayonnaise produced in this study is classified as low fat

KEYWORDS: Egg Yolk, Mayonnaise, Virgin Coconut Oil, coconut water

I. INTRODUCTION

Virgin Coconut Oil (VCO) is an oil produced from the fresh old coconut kernel (*Cocos nucifera L.*) processed without adding water, heating no more than 60°C or without heating therefore it is safe for consumption (Mandei, 2019). VCO can stimulate metabolism, reduce free radicals, prevent heart attacks, help reduce platelet stickiness, has a role as an antioxidant as well as vitamin E, and lowers blood and liver levels of low-density lipoprotein (LDL) cholesterol (Fatimah and Gugule, 2013).

Most people do not like to consume it directly because of the oily taste. Therefore, one alternative to reduce its oily taste by making it in the form of an emulsion. Emulsions are generally made by mixing the aqueous and oil phases. Wiyani et al., (2016a) conducted research on making emulsions made from VCO with various types of emulsifiers and using tween 80 and span 80 emulsifiers (Wiyani et al., 2016b). Wiyani et al., (2021b) has also made a VCO emulsion using orange extract and carrot extract (Wiyani et al., 2017) as the aqueous phase. Fruit juice or coconut water can be used as an alternative to the aqueous phase.

Coconut water is a product from the coconut plant that has not been widely utilized, even though coconut water contains lots of carbohydrates, calories, minerals and protein which are very beneficial for the body (Pakaya et al., 2021). Coconut water has properties and high nutritional value (Hasyim et al., 2017). In addition to carbohydrates and protein, coconut water also contains micro elements in the form of minerals, which the body needs. These minerals include potassium (K), calcium (Ca), magnesium (Mg), ferum (Fe), cuprum (Cu), phosphorus (P), and sulfur (S) (Wahyuni, 2018).

The process of making the emulsion is influenced by several factors including temperature, stirring time and stirring speed. Several previous studies have carried out various rotation speeds in the manufacture of emulsions such as 8000 rpm (Dianingsih et al., 2016), 15000 rpm for 10 seconds (Fasinu et al., 2015), 12000 rpm for 20 minutes (Estiasih et al., 2015) 10000 rpm for 10

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minutes (Fatimah et al., 2012), and 15000 rpm for 4 minutes (Muin and Faradillah, 2021), (Wiyani et al., 2018) and (Wiyani et al., 2016b).

One of the emulsion products that can be made from VCO is mayonnaise. It is an emulsion made from a mixture of vegetable oil and egg yolk as an emulsifier. In addition to egg yolks, mayonnaise can be made by adding various other ingredients such as sugar, mustard, lime and salt (Hidayati et al., 2020). According to Devi et al. (2021) mayonnaise consist of some basic ingredients such as 70-80% vegetable oil and around 15-20% egg yolks. Besides that, mayonnaise can also be made of a low-fat content (Mohammed et al., 2022). Mayonnaise is widely used as a flavoring and dressings in several types of food such as pizza, salad, or burgers (Wahyuni and Sulistyani, 2021).

Based on the description abovementioned, research on mayonnaise production from virgin coconut oil (VCO) and coconut water with various additions of egg yolks needs to be further investigated. It is expected that the data obtained can be the basis for the development and utilization of VCO emulsions.

II. RESEARCH PROCEDURE

Research Materials and Tools

The ingredients used were coconut water, virgin coconut oil (VCO), egg yolks, sugar, mustard, lime, xanthan gum, and salt. The equipment used was the ultra turrax homogenizer. Other tools included sample bottles, viscometers, spatulas, stopwatches, ovens, 250 mL beakers, analytical balances, refrigerators, and other equipment for analysis.

Research Method

For experiments, the process of making mayonnaise from VCO was using a method elaborated by Hidayati et al., (2020) and Wiyani et al., (2020) 5% egg yolk was mixed with 1g sugar, 8.5g lime, 0.5g salt, 5g mustard, 0.75g xanthan gum, coconut water and VCO (ratio of coconut water:VCO = 4:1). Furthermore, stirring process was carried out with the ultra turrax homogenizer for 4 minutes at a speed of 15000 rpm until a mayonnaise dough was formed. This procedure was repeated with the addition of 7%, 9%, 11% egg yolk and without egg yolk (0% yolk).

Tests were carried out on viscosity (Viscometer Atago VISCOTM 6800), stability (Wiyani et al., 2016a), organoleptic (Test Likeness), water content (SNI 01-2891-1992), protein content (SNI 01-2891-1992), total plate count (SNI 01-2891-1992) and fat content (SNI 01-2891-1992) 1992).

III. RESULT AND DISCUSSION

Viscosity

The results of the analysis showed that the use of coconut water and the egg yolks affect on the mayonnaise produced. In Table 1, the mayonnaise viscosity data is listed using coconut water and the egg yolks.

Table 1. Mayonnaise Viscosity Data

	Egg Yolk Concentration				
	0%	5%	7%	9%	11%
Viscosity (cP)	1040	673	691	614	555

Table 1 shows that the highest mayonnaise viscosity is found at a concentration of 0% egg yolk of 1040.20 cP. By increasing the egg yolk content, the viscosity of mayonnaise decreased. The viscosity of mayonnaise on the market ranges from 3000-4000 cP. The mayonnaise in this study was thinner than the mayonnaise on the market because it was made of a larger amount of water than oil. Several factors affect the decrease in viscosity, namely the selection of the type and concentration of the emulsifying agent, the stirring process carried out and the size of the dispersion particles (Raihana, 2015).

Stability

The results of the analysis revealed that the use of coconut water and the egg yolks to mayonnaise resulted in good stability, ranging from 98.53% -100% as shown in Table 2

Table 2. Mayonnaise Stability Data

Egg Yolk Concentration	Stability (%)	Information
0%	100.00	Stable
5%	100.00	Stable

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7%	100.00	Stable
9%	100.00	Stable
11%	98.53	Stable

Table 2 shows that the highest stability of mayonnaise is at a concentration of 0%, 5%, 7% and 9% egg yolk of 100%, respectively, and the lowest stability of mayonnaise is at a concentration of 11% egg yolk of 98.53% yet it is still considered as relatively stable because according to Ayu et al., (2020) an emulsion is said to be stable if it achieves a minimum stability of 65%.

Organoleptic

Organoleptic testing in this study was assessed by 30 panelists on mayonnaise samples. The assessment included color, taste, aroma and texture, with a value of 1 = really do not like, 2 = do not like, 3 = neutral, 4 = like and 5 = really like. The test results from the panelists are listed in Table 3.

Table 3. Mayonnaise Organoleptic Data

Criteria	Egg Yolk Concentration				
	0%	5%	7%	9%	11%
Color	3.73 ^a	3.97 ^a	3.97 ^a	3.77 ^a	3.80 ^a
Taste	3.03 ^{ab}	2.76 ^{ab}	2.93 ^{ab}	3.23 ^b	3.10 ^{ab}
Aroma	3.63 ^b	3.30 ^a	3.36 ^a	3.40 ^a	3.40 ^a
Texture	3.63 ^{bcd}	3.80 ^{cd}	4.03 ^d	3.43 ^{abcd}	3.20 ^{abc}

Note: Different letters indicate significant differences

Based on the data in Table 3, the color of the mayonnaise obtained is yellowish. The score shows 3.73-3.97 (rounded 4). It can be assumed that the panelists like the color of mayonnaise produced in this study. However, the addition of egg yolks had no effect on the color of mayonnaise (Table 3). One of the factors that consumers need to pay attention to when choosing a product is the color of the food (Kartikasari et al., 2019). Besides functioning as an emulsifier, egg yolks also affect the color of a food. Besides that, the use of mustard also affects the color of food (Prabowo, 2020).

The highest preference value for taste was obtained on mayonnaise at a concentration of 9% egg yolk (score 3.23). While the lowest preference value on mayonnaise at a concentration of 5% egg yolk. Mayonnaise made in addition to these combinations has the same taste. The value of consumer preference for the taste of mayonnaise is classified as neutral.

Mayonnaise made at a concentration of 9% and 11% egg yolks, produced the same aroma. The highest flavor preference value was obtained for mayonnaise made without the addition of egg yolks of 3.63 (rounded 4). The mayonnaise made of other variations produced the same level of preference. The results of this study are close to the value of mayonnaise made of palm oil which has a score of 4.2 (Hutapea et al., 2016).

The effect of using coconut water and egg yolk on mayonnaise showed a very significant difference in the mayonnaise texture. The highest preference value is in mayonnaise which is made of the addition of 7% egg yolk with a score of 4.03 (preference). Wahyuni and Sulistyani, (2021) stated that panelists tended to like the mayonnaise with a thick texture (like), but not too hard (very thick).

Mayonnaise Characterization compared to SNI

Mayonnaise characteristics testing was carried out on mayonnaise at the concentration of 7% egg yolk. The resulting data are listed in Table 4.

Table 4. Data Comparison of SNI Mayonnaise

Parameter	Result	SNI 01-4473-1998
Water content	76.75%	Maks 30%
Protein content	2.21%	Min 0.9%
Fat content	12.49%	Maks 65%
Total Plate Count (TPC)	2.7x10 ²	Max 1x10 ⁴ colonies/gr

In Table 4, it was known that the water content of the mayonnaise produced was 76.75%. According to SNI 01-4473-1998, the water content in mayonnaise is a maximum of 30%. Thus, the results of this study do not meet the requirements for mayonnaise quality standards in SNI because this study aims to make low fat mayonnaise so as to produce high water content.

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The results of testing the mayonnaise protein content in this study was 2.21%. This value is in accordance with SNI-01-4473-1998, which is a minimum of 0.9%. The chicken egg yolk used is a source of protein in mayonnaise, which contains vitamin A and 15-16% of protein content (Prabowo, 2020).

The results of the mayonnaise fat content test were 12.49%, while the quality requirements for mayonnaise fat content in SNI 01-4473-1998 were at least 65%. When compared with the standard mayonnaise, the fat content obtained in this study did not meet the requirements. However, the mayonnaise obtained in this study is classified as low-fat mayonnaise. This is in line with Mohammed (2022) which obtained 30% fat content in the mayonnaise produced.

The result of the total plate count (TPC) test was 2.7×10^2 colonies/gr. This is in accordance with SNI-01-4473-1998 that the quality requirement for the total plate count of mayonnaise is a maximum of 1×10^4 colonies/gr.

IV. CONCLUSIONS

Mayonnaise made of virgin coconut oil and coconut water has stable properties and the highest viscosity value of 1040 cP at the addition of 0% egg yolk. An increase in egg yolk content decreases the viscosity of mayonnaise. In organoleptic testing, the addition of 7% egg yolk has a preference level for taste (score 2.93 = neutral), color (score 3.97 = likes), aroma (score 3.36 = neutral), and texture (score 4.03 = likes). When compared with SNI 01-4473-1998, mayonnaise in this study met the requirements for protein content (2.21%) and total plate count (2.7×10^2 colonies/gr). However, the water content (76.75%) is higher than SNI, whereas the fat content (12.49%) is lower than SNI. To conclude, the mayonnaise produced in this study is classified as low fat.

ACKNOWLEDGMENT

We would like to thank the Faculty of Industrial Technology, Indonesian Muslim University, Makassar, Indonesia for the funds provided through the Faculty's Excellence Research Grants for the 2022 fiscal year.

REFERENCES

- 1) Ayu, D. F., Gaol, L. T. S. and Diharmi, A. (2020) 'Stabilitas Emulsi dan Sensori Mayones Campuran Minyak Abdomen Ikan Patin dan Minyak Sawit Merah dengan Penambahan HPMC SS12 Sebagai Penstabil', *Jurnal Teknologi dan Industri Pertanian Indonesia*, 12(2), Hal. 63–70.
- 2) Badan Standardisasi Nasional. (1992) 'Cara Uji Makanan dan Minuman' SNI 01-2891-1992.
- 3) Devi Y. Y, Ainun A. S., Putri N. H., dan Yusril D. T. (2021) 'Formulasi Mayones Berbasis *Virgin Coconut Oil* dan Cuka Air Kelapa untuk Mengurangi Risiko Dislipidemia', *Majalah Farmasi dan Farmkologi. Fakultas Farmasi, Universitas Hasanuddin*, 25(3), Hal. 98–102.
- 4) Dianingsih, N., Purnomo, E. H. dan Muchtadi, T. R. (2016) 'Sifat Reologi dan Stabilitas Fisik Minuman Emulsi Minyak Sawit', *Jurnal Teknologi dan Industri Pangan*, 27(2), Hal. 165–174.
- 5) Estiasih, T., Ahmadi, K. dan Rizqiyah, L. A (2015) 'Mikroemulsifikasi Fraksi Tidak Tersabunkan Distilat Asam Lemak Minyak Sawit', *Jurnal Teknologi dan Industri Pangan*, 26(2), Hal. 189–200.
- 6) Fasinu, E. G., Daniel I.O, dan Jideani, V. A. (2015) '*Influence of selected physicochemical factors on the stability of emulsions stabilized by Bambara groundnut flour and starch*', *Journal of Food Science and Technology*, 52(11), Hal. 7048–7058.
- 7) Fatimah, F., Rorong, J. dan Gugule, S. (2012) 'Stabilitas dan Viskositas Produk Emulsi *Virgin Coconut Oil*-Madu', *Jurnal Teknologi dan Industri Pangan*, XXIII(1), Hal. 75–80.
- 8) Fatimah, F. dan Gugule, S. (2013) 'Kualitas Emulsi Salad *Dressing* Berbahan Dasar *Virgin Coconut Oil*', *Agritech Journal*, 31, Hal. 79–85.
- 9) Hidayati, S., Zuidar AS., Sugiharto, S., dan Neri ES. (2020) 'Pemanfaatan Minyak Sawit Merah untuk Produksi *Mayonaise*'. *Prosiding Seminar Nasional, Bangka Belitung*, 20-21 Juli. Hal. 1176-1185.
- 10) Hutapea, C. A., Rusmarilin, H. dan Nurminah, M. (2016) 'Pengaruh Perbandingan Zat Penstabil dan Konsentrasi Kuning Telur terhadap Mutu *Reduced Fat Mayonaise*', *Jurnal Rekayasa Pangan dan Pertanian*, 4(3), Hal. 304–311.
- 11) Kartikasari L. R., Hertanto B. S., dan Nuhriawangsah A. M. P. (2019) 'Evaluasi Kualitas Organoleptik *Mayonaise* Berbahan Dasar Kuning Telur yang Mendapatkan Suplementasi Tepung Purslane (*Portulaca Oleracea*)', *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan*, 07(2), Hal. 81–87.
- 12) Mandei, J. (2019) *Formulation of VCO Emulsion Drink Using Emulsifier Variations (Arabic Gum, Tween 80) and Water*', *Jurnal Industri Hasil Perkebunan*, 14(1), Hal. 11–20.

The Effect of Egg Yolk on the Physical and Organoleptic Properties of Mayonnaise from Virgin Coconut Oil and Coconut Water

- 13) Mohammed, N.K., Ragavan, H., Ahmad, N.H., dan Hussin, A. S. M. (2022) 'Egg-Free Low-Fat Mayonnaise from Virgin Coconut Oil', *Foods and Raw Materials Journal*, 10(1), Hal. 76–85.
- 14) Muin, J. M. dan Faradillah, H. (2021) 'Formulasi Emulsi *Virgin Coconut Oil* Menggunakan *Emulsifier* Alami pada Berbagai Rasio Penambahan Air', *Skripsi*, Program Studi Teknik Kimia, Fakultas Teknologi Industri, Universitas Muslim Indonesia, Makassar.
- 15) Pakaya, S., Une, S. dan Antuli, Z. (2021) 'Karakteristik Kimia Minuman Isotonik Berbahan Baku Air Kelapa (*Cocos Nucifera*) dan Ekstrak Jeruk Lemon (*Citrus Limon*)', *Jambura Journal of Food Technology*, 3(2), pp. 102–111.
- 16) Prabowo, Y. (2020) 'Sifat Fisik, Kimia dan Sensori *Mayonnaise* dengan berbagai Jenis Minyak Nabati', *Skripsi*, Program Studi S-1, Teknologi Hasil Pertanian, Fakultas Teknologi Hasil Pertanian, Universitas Semarang, Semarang.
- 17) Raihana, Y. N. (2015) 'Uji Stabilitas Fisik dan Komponen Kimia Emulsi Minyak Biji Jinten Hitam (*Nigella sativa L.*) Tipe Minyak dalam Air dengan Penambahan Antioksidan α -*Tocopherol* menggunakan GCMS', *Skripsi*, Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Islam Negeri Syarif Hidayatullah. Jakarta.
- 18) SNI 01-4473 (1998) '(Mayones)', *Sni 01-4473-1998*, Hal. 1–8.
- 19) Wahyuni, S. (2018) 'Pemanfaatan Limbah Air Kelapa (*Cocos nucifera L.*) Untuk Pembuatan Kecap dan Uji Organoleptik Sebagai Referensi Mata Kuliah Bioteknologi', *Skripsi. Fakultas Tarbiyah dan Keguruan, Universitas Islam Negeri Ar-Raniry Darussalam, Banda Aceh*, 6(1), Hal. 1–8.
- 20) Wiyani, L., Aladin, A., Sabara, Z., Mustafiah, M., dan Rahmawati. (2020) 'Pengaruh Waktu dan Kecepatan Homogenisasi terhadap Emulsi *Virgin Coconut Oil*-Sari Jeruk dengan *Emulsifier* Gum Arab (*The Effect Of Time and S*)', *Journal of Chemical Process Engineering*, 5(2), Hal. 50-55.
- 21) Wiyani L., Aladin, A., Yani, S., dan Rahmawati. (2016) 'Karakteristik Emulsi Virgin Coconut Oil dengan Menggunakan Berbagai Jenis Emulsifier', *Prosiding Seminar Nasional 2016 PATPI*, Makassar. 18-20 Agustus, Vol. 80, Hal. 18–20.
- 22) Wiyani L., Aladin, A., Yani, S., Dan Rahmawati. (2016) 'Stability of Virgin Coconut Oil Emulsion with Mixed Emulsifiers Tween 80 and Span 80', *ARNP Journal of Engineering and Applied Sciences*, 11(8), Hal. 5198–5202.
- 23) Wiyani, L., Aladin, A., Yani S., dan Rahmawati. (2017) 'Pengaruh Ekstrak Wortel Terhadap Emulsi Virgin Coconut Oil Menggunakan Campuran *Emulsifier* Tween 80 dan Span 80', *Prosiding Seminar Nasional PATPI*, Bandar Lampung, 28 September 2017.
- 24) Wiyani, L. Aladin, A. Yani, S. Mutmainnah, S. H. N. dan Mandang H. D. (2018) 'Effect of Sucrose and Citric Acid Addition in The Virgin Coconut Oil Emulsion', *Earth and Environmental Science Journal*, 175(1), Hal. 012024.
- 25) Wiyani, L. Aladin, A., Rahmawati, dan Mustafiah. (2021) 'Sifat Fisika dan Kimia Emulsi VCO dengan Ekstrak Jeruk', *Jurnal Ilmu Bumi dan Lingkungan*, 712(2021), Hal. 012046.



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The Effect of Variation Training on Passing and Stopping Skills in Football on Students' Extracurricular at SMPN 1 Siak Hulu, Kampar Regency



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ABSTRACT: Based on observations conducted at Students' Extracurricular at SMPN 1 Siak Hulu, Kampar Regency, the author notices that the basic techniques of Passing and Stopping are still lacking. This is proven by the inaccurate passing of the ball to the other players, and the students' inability to stay in control of the ball when receiving passes, which prevents football game from reaching maximum results, especially in real matches. Football passing and stopping skills can be improved through variation training methods. This study aimed to determine if different exercises have an effect on passing and stopping in football on students' extracurricular at SMPN 1 Siak Hulu, Kampar District. This is quantitative research applying a Pre-experiment design with a Pretest-Posttest design and a statistical formula or T-score. Population is the entire object of research, so for this study, the population consisted of all 24 students who participated in extracurricular football activities at SMPN 1 Siak Hulu, Kampar Regency. The t-count value for this study was 13.18, while the t-table with a significant 5% and db = N-1 (24-1 = 23) was 2.07. Therefore, t count > t table. Thus, there is a substantial difference between the results of the Pretest and Posttest. Based on the findings of this study, it can be concluded that the proposed hypothesis regarding the relationship between Variation Training on Passing and Stopping Skills in Football on Students' Extracurricular at SMPN 1 Siak Hulu, Kampar Regency is accepted. Students who participate in extracurricular football activities at SMPN 1 Siak Hulu, Kampar Regency, and who wish to improve their football skills are advised to always practice diligently. This is due to the fact that a form of sport skill can only be acquired through regular, continuous practice.

KEYWORDS: Effect of Variation Training, Passing and Stopping Skills.

I. INTRODUCTION

Sport plays an important part in human life, both for improving achievement and maintaining a healthy body. Everyone can participate in sports activities, both formally and informally. One of the purposes of sports is to improve physical fitness, so that daily activities can be performed properly.

Sport is also an effort to improve human resource quality. As stated in Article 1 paragraph 23 of Law Number 3 of 2005 concerning the National Sports System, "sports coaching and development is a conscious effort carried out systematically to achieve sports goals." Sports have very complex objectives. Therefore, this sport must be fostered in order to produce humans who are healthy, fit, qualified, and accomplished.

One form of sports coaching is early introduction to sports. Regular coaching will produce athletes who perform optimally, and in the school environment, sports can be developed by conducting extracurricular activities, because these activities aim to develop one of the sports fields in which the students are interested, such as football. Football is one of the sports that has become popular on a national, regional, and even rural level. This is proven by the presence of soccer schools and clubs in both urban and rural areas.

Football is a sport with complex movements. It means that an action consists of a combination of elements of motion that are properly coordinated. To play the ball effectively, you must master the movement technique. Effective and efficient football movements must be grounded on a solid foundation of basic techniques. Football's basic techniques consist of kicking techniques (passing), dribbling techniques (dribbling), shooting techniques (shooting), and controlling balls (stopping).

Passing and stopping are two basic techniques that must be mastered. In football, one of the techniques used to pass the ball with the inside of the foot is kicking the ball (passing). The objective of passing in football is to set the tempo of the game, change the pace of the game, and make it easier to pass, whereas stopping the ball (stopping) is an attempt to stop or control the

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ball so that it cannot be easily taken by the opponent.

Athletes must be motivated to engage in an activity in order to acquire the ability to perform basic football techniques. Athlete motivation can originate from within the athletes themselves (internal), as well as from external factors such as coaches and infrastructure. With adequate infrastructure, it will be easier for coaches or athletes to run programs and achieve optimal training outcomes. The extracurricular football activities conducted in schools are also designed to improve basic football skills. SMPN 1 Siak Hulu is one of the schools that offer football-related extracurricular activities. The purpose of this football extracurricular activity is to motivate students and develop their football skills.

According to researchers' observations of football extracurricular activities at SMPN 1 Siak Hulu, Kampar Regency, there are still numerous issues, including a lack of passing accuracy and ball control, the ball being too far from the player's feet so that it is less protected and can be easily stolen by the opponent. In passing, the ball is frequently off target, preventing it from reaching the other player and frequently leaving it too far away. This makes it simple for the opponent to control the ball. Students' stopping is still not accurate and precise, resulting in imperfect ball control when they receive a pass. This may also make it easier for the opponent to steal and maintain possession of the ball.

Providing methods and forms of training with the proper procedures will have an effect on improving the basic passing and stopping techniques. The inaccuracy in passing and stopping is a result of students not engaging in a variety of exercises. The training method used by extracurricular instructors is still suboptimal, consisting only of a warm-up around the field, stretching muscles, and practicing basic techniques in general. Students receive inadequate training in passing and stopping techniques. Therefore, improvements must be made using more effective and varied training methods.

Based on the preceding explanation, the authors conducted research with the title "The Effect of Variation Training on Passing and Stopping Skills in Football on Students' Extracurricular at SMPN 1 Siak Hulu, Kampar Regency" to discover a solution to the problem.

II. METHOD

In this study, the author applied the experimental method. Experimental research attempts to determine the cause-and-effect relationship between two factors that were deliberately implemented by the researcher, while reducing or eliminating other confounding variables (Sukardi, 2003: 179).

This study used a quasi-experiment. The experiment was conducted according to Sukardi's design (2003:184).

Pretest	Passing and stopping practice	Posttest
Y ¹	X	Y ²

Source: Sukardi (2003:184)

Population is the total number of study participants. If every component of the research area are to be studied, then the research is population research. The research or study is also known as a population study or census study (Arikunto, 2010, p. 173). This study's population consisted of 24 students who participated in extracurricular football activities at SMPN 1 Siak Hulu, Kampar Regency.

The sample represents a portion of the population chosen for the data source (Sukardi, 2003, p. 54). Regarding the population, which according to the researcher was not too large, the researcher sampled all students who participated in extracurricular football, including 8 ninth-graders, 8 eighth-graders, and 8 seventh-graders. Therefore, 24 students were studied as samples.

The T-test was used in this study to analyze the data regarding the effect of variation training. Prior to conducting the T-test, the average mean was calculated using the following formula:

Arikunto (2010:351):

$$Md = \frac{\sum d}{N}$$

Description:

Md = Mean

d = Deviation Score

n = Number of Respondents

To analyze the results of the study, the pre-test and post-test group formula was used:

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$$t = \frac{Md}{\frac{\sqrt{\sum x^2 d}}{n(n-1)}}$$

Description:

- Md* = mean value of the difference between pre-test and post-test
- Xd* = deviation score of each subject
- $\sum x^2 d$ = the sum of squares and deviations
- N = number of samples

III. RESULTS AND DISCUSSION

Based on the problems described in the previous section, the variables of this study are the implementation of variation training methods to enhance football passing and stopping skills. The following is a description of the data regarding football players' passing and stopping abilities:

A. Pretest Results of Passing and Stopping in Football in the Extracurricular Students of SMPN 1 Siak hulu, Kampar Regency

According to the results of the study conducted prior to receiving variation training, the highest score was 11 for two people (8.3%), the score of 10 for one person (4.2%), the score of 9 for two people (8.3%), the score of 8 for eight people (33.3%), the score of 7 for three people (12.6%), and the lowest score was 6 for eight people (33.3%), with an average of 7.625. For additional information, please refer to the following table:

Table 1. Frequency distribution of passing and stopping football test results before being given various exercises on extracurricular students of SMPN 1 Siak hulu, Kampar Regency.

No	Score	Frequency	Percentage
1	11	2	8,3 %
2	10	1	4,2 %
3	9	2	8,3 %
4	8	8	33,3 %
5	7	3	12,6 %
6	6	8	33,3 %
Sum		24	100%

Source: Data Processing Results, 2014

B. Final Test Results (Postest) Passing and Stopping in Football After Being Given Variation Training Methods on Extracurricular Students of SMPN 1 Siak hulu, Kampar Regency

The results of passing and stopping after receiving variation training obtained the highest score with the best score of 13 as many as 1 person (4.2%), the score of 12 as many as 6 people (25%), the score of 11 as many as 7 people (29.2%), the score of 10 as many as 5 people (20.8%), the score of 9 as many as 1 person (4.2%), and the lowest score was 8 as many as 4 people (16.6%). The results of the passing and stopping tests are presented in the following table:

Table 2. Frequency distribution of passing and stopping test results after being given variation trainings on extracurricular students of SMPN 1 Siak hulu, Kampar Regency.

No	Score	Frequency	Percentage
1	13	1	4,2 %
2	12	6	25 %
3	11	7	29,2 %
4	10	5	20,8 %
5	9	1	4,2 %
6	8	4	16,6 %
Sum		24	100 %

Source: Data Processing Results, 2014

C. Research Hypothesis Testing

The test data on passing and stopping scoring are analyzed using statistical techniques with existing formulas to determine

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whether the variation training method can improve passing and stopping abilities in football games on students' extracurricular activities at SMPN 1 Siak hulu, Kampar Regency. The purpose of proving this hypothesis is to determine the scale of the influence of variable X (independent variable), specifically the effect of variation training on variable Y (dependent variable), particularly the passing and stopping abilities in football on the students' extracurricular activities at SMPN 1 Siak Hulu, Kampar Regency.

Table 3. Results of hypothesis testing of initial test data (pretest) and final test (posttest) of passing and stopping skills in the football extracurricular at SMPN 1 Siak Hulu, Kampar Regency.

Mean		Df(N-1)	t table 5%	t count	conclusion
Pre test	Post test				
183	240	24-1	2,07	13,18	Affecting
$X_1=7,625$	$X_2 = 10$	23			

The previously described test results obtained a t-count value of 13.18. With 5% significance and db = N-1 (24-1 = 23), the t-table was 2.07. Because t-count > t-table, it can be concluded that variation training had a significant influence on the results of the pre-test and post-test of passing and stopping skills in football. Thus, the proposed hypothesis, that there is a significant influence of variation training on the ability of passing and stopping in football on students' extracurricular at SMPN 1 Siak Hulu, Kampar Regency, can be accepted.

Based on the findings of the preceding analysis, it is clear that there are differences in the results of passing and stopping abilities in football after being exposed to a variation training method. Variation training given to extracurricular students at SMPN 1 Siak Hulu, Kampar Regency, resulted in an average pre-test score of 7.625 and an increase in average post-test scores of 10. Thus, the use of variation training methods in football can improve passing and stopping skills.

This variation training is a training material where this method is used for the activity material conditions. Every sport requires practice, and practice is a factor in students' ability to reach their objectives. In football, players need a variety of exercises to enhance their ability to perform good game techniques. Variation training is an essential form of exercise for football players.

The main purpose of this training method is to prevent student boredom during training while simultaneously training strength, agility, and speed, as the principle of variation training is implemented by interspersing different forms of exercise with recovery time (rest), so that it can gradually improve passing and stopping abilities. In football training, variation training aims to improve the ability to master basic techniques, particularly passing and stopping, as well as provide motivation and reduce boredom.

This is supported by the theory suggested by Ambarukmi (2007, p. 14): monotonous training methods will result in boredom, preventing the achievement of training objectives; therefore, it is necessary to design a variety of models and training methods that adhere to the training objectives. If training objectives are met, achieving success is simple and easy. Passing and Stopping training requires the use of methods that can stimulate the enthusiasm of the students or athletes, and variation training is one form of training that can do this because it contains a variety of training elements and is not monotonous.

This research reveals that training plays an important role in improving the passing and stopping skills of football players who participate in extracurricular activities at SMPN 1 Siak Hulu, Kampar Regency. It is hoped that this will spark a movement that influences how football's passing and stopping techniques are trained.

According to the results of the calculation and analysis of the research data, variation training on the passing and stopping skills in football has a significant impact on students' extracurricular activities at SMPN 1 Siak Hulu, Kampar Regency. In this regard, with well-organized and directed training, variation training will have a significant impact on passing and stopping skills. Thus, it can be concluded that variation training is essential for improving passing and stopping skills in football in order to achieve a higher level of performance.

IV. CONCLUSIONS

Based on the findings of this study's data analysis, it can be concluded that Effect of Variation Training on Passing and Stopping Skills in Football on Students' Extracurricular Activities at SMPN 1 Siak Hulu, Kampar Regency, involving 24 students. 14 meetings of research were conducted to determine the Effect of Variety Training on Passing and Stopping Skills in Football Extracurricular at SMPN 1 Siak Hulu, Kampar Regency. The researcher presents the following recommendations based on these findings.

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1. Students who want to improve their football skills should always practice diligently. This is due to the fact that a form of sports skill is acquired through continuous, consistent practice.
2. To improve the ability to play football, coaches or teachers must develop various forms of variation training so that the objectives of sports coaching results in increased achievement.
3. Due to the limitations of this study besides its limited scope and sample size, it is recommended that future researchers expand the study's scope and explore a larger sample size.

REFERENCES

- 1) Ambarukmi, Dwi Hatmisari. 2007. *Pelatihan Pelatih Fisik Level Satu*, Jakarta: Kemenpora.
- 2) Arikunto, Suharsimi. 2010. *Prosedur penilaian suatu pendekatan praktik*. Jakarta: Rineka Cipta.
- 3) Dinata, Marta. 2007. *Dasar-dasar mengajar sepak bola*. Jakarta: cerdasraya.
- 4) Haris, Syamsuddin. 2001. *Olahraga dan Pengaruhnya Terhadap Tubuh*. Pekanbaru: Universitas Islam Riau.
- 5) Harsono, 1988. *Coaching dan Aspek-Aspek Psikologis dalam Coaching*. Jakarta: C.V. Tambak Kusuma.
- 6) Irianto, Agus. 2009, *Statistic Konsep Dasar dan Aplikasinya*. Jakarta: Kencana.
- 7) Kementrian Negara Pemuda dan Olahraga. 2005 *Undang-undang Keolahragaan Nasional no 3 tahun 2005*. Jakarta.
- 8) Koger, Robert. 2007. *Latihan Dasar Andar Sepakbola Remaja*. Macanan Jaya Cemerlang.
- 9) Mielke, Danny. 2003. *Dasar-dasar Sepak bola* Jakarta: Pakarraya.
- 10) Muhajir, 2007, *Pendidikan Jasmani Olahraga dan Kesehatan*. Jakarta: Yudhistira.
- 11) Nurhasan, 2001. *Tes dan Pengukuran Dalam Pendidikan Jasmani, Prinsip-Prinsip dan Penerapannya*. Jakarta: Depdiknas.
- 12) Soekatamsi. 1995 *Permainan Bola Besar 1 (Sepak Bola)*. Jakarta: Universitas Terbuka.
- 13) Sukardi, 2003. *Metodologi Penelitian Pendidikan*. Yogyakarta: Bumi Askara.
- 14) Syafruddin, 2005. *Pengantar Ilmu Melatih*. Padang: Fakultas Ilmu Keolahragaan



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Implementation of Moderate Islamic Values at Elementary Schools in Indonesia



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ABSTRACT: Moderate Islamic values are considered as a very important element that should be implemented within education institutions context. Studies on the implementation of moderate Islamic values within education institution contexts in Indonesia have been carried out within middle and higher education institutions. However, limited studies have been conducted to understand moderate Islamic values implementation within elementary schools context. Therefore, the aim of this study is to examine the implementation of moderate Islamic values within elementary schools context in Indonesia. This study used the qualitative case study method, and the data was gathered through direct observation, in-depth interviews, and written document analysis. The findings of this study show that an elementary school in Alkhairaat Palu, Indonesia, has implemented a number of moderate Islamic values within the school context. Those moderate Islamic values include moral values. Moderate character values, tolerance, and mutual respect values. Those values were integrated into the school's curriculum, extracurricular activities, and extra curricula activities. Students and teachers are imposed to implement moderate Islamic values within the daily school context.

KEYWORDS: Moderate Islam, Islamic values, Elementary schools

I. INTRODUCTION

Indonesia is the most populous Muslim country in the world. It is also recognized as the most diverse nation in various aspects. The diversity of ethnic groups, religions, and customs is a great blessing from the Divine. Yet, it can also lead to civil strife if the organization and education in understanding differences are not taken into account. Teachers play a central role in instilling values and practicing the teachings of Islam in schools. Teachers are expected to impart the importance of tolerance during learning and shape a flexible and non-rigid attitude in practicing their adopted religious teachings without compromising their faith. Through effective internalization, students are expected to articulate the teachings of religion well, particularly the teachings of Islam, which prioritize openness, brotherhood, and harmony.

Islam, as a religion of mercy, has the advantage of having balanced teachings (moderate). Moderate means tending towards the middle path or dimension. Moderate signifies a balance between conviction and tolerance, where we hold certain beliefs while maintaining a balanced tolerance towards others. The differences between human beings are indirectly implied in the holy book of the Qur'an, Surah Al-Hujurat, verse 13, which states:

يَا أَيُّهَا النَّاسُ إِنَّا خَلَقْنَاكُمْ مِنْ ذَكَرٍ وَأُنْثَىٰ وَجَعَلْنَاكُمْ شُعُوبًا وَقَبَائِلَ لِتَعَارَفُوا إِنَّ أَكْرَمَكُمْ عِنْدَ اللَّهِ أَتْقَاكُمْ إِنَّ اللَّهَ عَلِيمٌ خَبِيرٌ

Translation:

"O mankind, indeed We have created you from a male and a female and made you into nations and tribes that you may know one another. Indeed, the most noble of you in the sight of Allah is the most righteous among you. Indeed, Allah is Knowing and Acquainted."

The verse above states that Allah SWT has decreed for each human being to have different backgrounds, whether in terms of ethnicity, nationality, culture, or social status, to know and understand one another and act kindly towards one another. This noble behavior is inclusive. The modernization of science demands the growth of commercialization in various aspects of community life, including religious elements. The measure of success in a matter is associated with how one can contribute to building the economic wheel. As society falls behind, individuals are required to have greater skills to compete with others.

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The history of Islam proves that various interests have made the Muslim community diverse. It is evident in the pursuit of power and other cultural factors that have become friction within Muslim society. However, such occurrences are common considering that the guiding source of life, through the interpretation of the Noble Qur'an, contains both *Muhkamat* (clear) and *Mutasyabihat* (ambiguous) verses and al-Hadits al-Nabawi. Therefore, the Muslim community has diversity in understanding Islam itself.

Quraish Shihab states that diversity in life is a certainty Allah SWT desires. It includes differences and diversity of opinions in the field of knowledge, even diversity in human responses regarding the truth of the scriptures, interpretation of their contents, and forms of practice. This condition allows efforts to pluralize various thinking patterns that become part of every individual's life experience. Islam Moderate is oriented towards the principle of courtesy in behavior, harmonious interaction in society, prioritizing peace and non-violence in preaching. This teaching is indeed in line with the main content of the mission of the Prophet Muhammad in spreading the message of *Rahmatan Lil Alamin*, which is to bring mercy to the entire universe. In this regard, respecting opinions and honoring the existence of others are essential aspects built by Moderate Islam. Differences in interpreting the content of Quranic verses are accompanied by different styles and attitudes in interacting with society. However, one central point of Islamic teachings is to bring tranquility and peace to living together with various activities.

II. LITERATURE REVIEW

A. Concept of Moderate Islamic Values

Islam is one of the most widely embraced religions worldwide, with teachings that bring peace and tranquility to its followers (Freedman, 2009). Even in the Qur'an and Hadith, there are mentions of the assurance of happiness in this world and the hereafter. Therefore, Islamic teachings greatly uphold values related to religious moderation. It goes beyond that, as Islam also promotes moderate attitudes encompassing several values, such as justice, balance, and tolerance. Moderation values always respect every difference and do not enforce. Moderate Islam is a characteristic that is neither overly extreme nor overly liberal. It means teachings in the middle ground, not favoring the right or the left, and playing a role as the central nation that brings peace (*Rahmatan Lil Alamin*). In this regard, the concept of the middle nation is also mentioned in the Qur'an, Surah Al-Baqarah, verse 143, which states:

لوسرلا نوکیو سانلا بلع ءادهش اونوکتل طسو ةمأ مکتلعلج کلذک و ا دیهش مکیلع

Translation:

"And thus, We have made you (the Islamic nation) a just and balanced community, that you may be witnesses over mankind and the Messenger (Muhammad) may be a witness over you."

The above verse mentions *طسو ةمأ* that states community that embodies the concept of being 'moderate,' which is commonly known as moderation. Apart from using the content of the verse as the foundation of moderate Islam, moderation itself is already a part of the Islamic religion. Islam teaches to invite without force and always provides peace for its community. It upholds the principle of maintaining peace as *Rahmatan Lil Alamin*. Therefore, the principle of moderate Islam is closely related to *Syariah*, worship, commanding what is right, forbidding what is wrong, morals, and social interactions.

The term 'moderate,' when examined etymologically, has several meanings. Firstly, it signifies justice and goodness. In Arabic, the meaning of goodness is based on the term *طسواً نمهموق* which means the person who is the best in their community and is protected. Secondly, it signifies balance, meaning not exaggerating in thinking towards the left (if rath) and not diminishing in thinking towards the right (frith). Quoting from the book "Al-Mufradat" by Al-Raghib Al-Ashfahani, which contains opinions stating that moderation also means *al-Wasath*, which refers to maintaining a fair and balanced attitude, avoiding extremism and radicalism.

Thirdly, it signifies being 'in the middle between two things' or 'between two ends of something.' The unique characteristic of the word *al-Wasath* or moderation is the presence of balance. Quraish Shihab also conveys similar sentiments regarding the position of being the middle nation. It states that the middle country's position lies between the right and the left in terms of behavior, and it is this position that serves as the foundation for everyone to act justly towards anyone. In another view, the middle class can attract everyone's attention so that from that central position, anyone can be seen, even from different directions. This intermediate position also allows them to observe anyone, anywhere. Thus, the part of the middle nation can serve as a reference or example for all parties.

From a terminological perspective, moderation is an attitude that avoids radical thinking and chooses to be in a middle position to stabilize the situation while remaining true to the principles of Islamic teachings. Moderation has interconnected meanings, meaning they both share the same meaning of avoiding violence in actions and thoughts. The essence of Islam is a teaching that is neither exaggerated nor too free.

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B. Forms of Moderate Islamic Values

One of the organizations in Indonesia, Nahdlatul Ulama, has declared itself as the vanguard of moderate Islam, embracing values of moderation (tawassuth), justice (tidal), and tolerance (tayammum), just as Muhammadiyah has made moderation a form of peace through its values of tawasuth, tazawun, tasamuh, sure, tajwid, and traded. Additionally, Din Syamsudin has expressed the opinion that.

Moderate Islam is a concept that teaches values of tolerance, justice, and balance and serves as a way to acknowledge the existence of every difference and act as a mediator to resolve conflicts that embrace pluralism (Somer, 2007). Quoted from the High-Level Consultation (HLC) of World Muslim Scholars, also known as the High-Level Consultation of World Muslim Scholars, held in Bogor on May 1-3, 2018, which was attended by Muslim scholars and intellectuals from around the world. The conference stated that at least seven values reflect Moderate Islam, and these seven values are:

a. Value of Tawassuth

Tawassuth is an act that is reasonable and lacking in action. It means having a moderate approach that bridges two extremes, avoiding extreme rigidity and excessive freedom, to create harmony in behavior, thinking, and actions. Consistency in cultivating the value of Tawassuth in all aspects is crucial to establish a character that can serve as a foundation and contribute to peaceful and controlled conditions.

b. Value of I'tidal

I'tidal is an action that reflects justice in behavior, responsibility, honesty, and placing things in their proper place. In instilling the value of fairness, almost all organizations and religions emphasize and teach the value of I'tidal, even though there may be differences in opinions. However, these differences still maintain the understanding of developing their vision and mission following their principles of thought. It is supported by the statement of M. Quraish Shihab, who interprets I'tidal as an unbiased action, meaning it does not choose or take sides in anything but aims to equalize thoughts and be in the middle. In general, I'tidal signifies fairness, balance, and objective actions.

c. Value of Tasamuh

Tasamuh is an attitude of respecting others and respecting every difference. This attitude leads to tolerance, which appreciates every societal diversity, including culture, customs, religion, beliefs, and thoughts. Definitely, tasamuh means understanding and empathizing with one another. Therefore, tasamuh is highly important when applied in social life.

d. Value of Shura

Shura is an attitude that emphasizes exchanging ideas in making decisions correctly. Definitely, Shura is also called Musyawarah, which means resolving an issue by reaching an agreement. The value of Shura is the essence of social life within a nation or a state, as it allows for unity by bringing together differences in order to achieve a common benefit. It indicates that Musyawarah is an effort to reach a collective decision.

III. METHODOLOGY

This study uses a qualitative case study method (Nurdin, Scheepers, & Stockdale, 2022; Nurdin, Stockdale, & Scheepers, 2013) to investigate the strategy of moderate Islamic values implementation at an elementary school in Alkhairaat Palu City, Indonesia (Nurfaiqah, Nurdin, & Alhabsyi, 2022; Rahmawati, Nurdin, & Pettalongi, 2022). Data were collected through direct observation in the case field and in-depth interviews with teachers and the elementary school principal (Jumahir, Nurdin, Pettalongi, Fitri, & Aftori, 2023; Nurdin, 2023). Written materials were also analyzed to understand the strategy used to implement moderate Islamic values in elementary school. Data analysis consists of several procedures, which include reduction and verification techniques with various data sources (Alamsyah, Pettalongi, & Nurdin, 2023; Arif, Nurdin, & Elya, 2023). The reduced data was then analyzed, reflecting on the theoretical concepts used in this study. Finally, the results were presented based on thematic issues found in the data (Muhaimin, Nurdin, & Alhabsyi, 2023; Nurdin, Agam, & Adawiyah, 2023; Nurdin, Pettalongi, Ahsan, & Febrianti, 2023), which show the insight relating to the implementation of moderate Islamic values within elementary schools context.

IV. RESULTS AND DISCUSSION

A. Implementation of Moderate Islamic Values at Elementary Schools

In the discussion section, the researchers describe and discuss the correlation between the data obtained in the field and the theories presented earlier. Based on the data collected by the researchers, in this discussion of findings, the researchers will describe the 'Implementation of moderate Islamic values in students of Alkhairaat Central Elementary School Palu' based on the research focus formulated.

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Based on the Core Competencies, abbreviated as (KI), and Basic Competencies, abbreviated as (KD), the cultivation of moderate Islamic values instilled in the students of Alkhairaat Ibtidaiyyah includes:

a) Faith values

Faith is the most fundamental aspect of Islam as it encompasses all aspects of human life, both external and internal. Faith is a conviction in the heart, expressed in words and demonstrated through actions (Makmur, Nurdin, & Pettalongi, 2022). Only with solid faith can a person perform worship properly and adorn themselves with noble character. From birth, a child is endowed with the seeds of true belief and is born in a state of purity. Therefore, nurturing the existing seeds must be given the utmost attention. With proper nurturing and education, the origins of faith will thrive and take deep root within a child. It will have a significant influence on their future development. The principles of the Islamic faith need to be explained, including its pillars and various branches, while distancing oneself from polytheism. It forms the cornerstone of Islam in shaping good values. Thus, from an early age, children must be introduced to the pillars of faith and guided on how to believe in each pillar. The materials taught include an introduction to Allah's creation, including humans, the names of Prophets and Messengers, the Al-Qur'an, and the surrounding environment, as well as an introduction to the unseen qualities of Allah and hidden creatures such as the angels.

b) Worship values

Every belief is considered complete when it is manifested in tangible actions, and that is what is regarded as true faith. Worship is one of the pillars of Islam that must be upheld, as Allah SWT created jinn and humans solely to worship Him. Parents, educators, and caregivers should be skilled in instilling worship habits in children so that as they grow into adulthood, they become obedient servants of Allah and consider worship as both a duty and a necessity. Once children are introduced to the pillars of faith and Islamic law, they can then be acquainted with the pillars of Islam, as they encompass the acts of worship performed by humans for Allah SWT. The worship practices that need to be introduced to children from a young age are the declaration of faith (shahada), the five daily prayers (salat), fasting during Ramadan, giving alms (zakat), and the pilgrimage to Mecca (hajj). The five daily prayers and reciting daily supplications should be encouraged as regular practices.

c) Ethical Values

Several foundations in moral education need to be implemented, including:

- 1) Instilling trust in a child's soul and encompassing self-confidence, faith in others, especially their educators, and belief that humans are responsible for their actions and behavior. They also have aspirations and spirit.
- 2) We are cultivating love and compassion towards family members and others.
- 3) Enlightening children that moral values arise from within individuals and not from rules and laws because ethics are the values that differentiate humans from animals.
- 4) They are developing sensitivity in children. It is done by awakening their awareness of their humanity.
- 5) They enculturate morality in children so that it becomes their habit and nature.

Early education about moderate Islam in primary schools is crucial to equip students from an early age with knowledge about the values of moderate Islam through the learning process. Therefore, the curriculum at SD Alkhairaat concerning the teaching of moderate Islam intends to provide a deep understanding to each student.

The cultivation of moderate Islamic values in primary schools is carried out through various activities within the school (Fathuddin, Nurdin, & Rustina, 2023). The moderate attitudes and perspectives towards religion within the school environment have become ingrained in every student, especially their teachers. At SD Alkhairaat, several forms of integration are related to the understanding of moderate Islam, which is consistent within the school environment. These include the teaching process delivered by every teacher in the classroom and the understanding that SD Alkhairaat instilled through the school's culture and various programmed extracurricular activities.

The promotion of moderate Islam in SD Alkhairaat continues to be implemented by the school management under the leadership of the headmaster. It is to emphasize that Islam is a peaceful religion and a source of blessing for the entire universe, bringing tranquility to anyone, regardless of their faith. Islam always promotes and teaches peace while rejecting acts of violence and terrorism that irresponsible individuals have carried out. Thus, it is evident that Islam values differences. Moderate Islam adheres to the teachings of Allah and the Prophet Muhammad, which include loving others, even if they are different, in various aspects, including different religions.

B. The Practice of Moderate Islamic Values at the School

The cultivation of moderate Islamic values, in general, is a process that involves conscious, planned, and accountable activities or efforts to maintain, train, guide, direct, and enhance religious knowledge, social skills, and religious practices and attitudes of children (faith/monotheism, worship, and morality) that exhibit characteristics of moderation, balance, and fairness, or can

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combine into moderation. It is aimed at being applied in everyday life. As for the cultivation of religious values that must instill in students, they include:

- 1) Faith values
- 2) Worship values
- 3) Moral values. Several basic principles in moral education need to be implemented, including:
 - a. Instilling trust in a child's soul includes self-confidence, faith in others, especially their educators, and believing that humans are responsible for their actions and behavior. They also have aspirations and enthusiasm.
 - b. We cultivate love and compassion towards others, family members, and others.
 - c. Making children aware that moral values arise from within humans, not rules and laws. Because morality is the value that distinguishes humans from animals
 - d. It is developing sensitivity in children. It can be done by awakening their sense of humanity.
 - e. They are cultivating morality in children to become their habit and character.

The cultivation of moderate Islamic values carried out by the teachers of SD Alkhairaat through the teaching process in the classroom, based on the syllabus, is further developed by the respective teachers and applied in interactions within the school environment. Among the various aspects of faith and morality, the emphasis is placed on moral teachings. The core competencies include demonstrating respect and obedience towards parents and teachers as an implementation of the understanding from Surah Luqman (31):14, showing respect towards family members as an implementation of the knowledge from Surah An-Nisa (4):36, speaking with good manners as an implementation of the understanding from Surah Al-Baqarah (2):83, understanding and exemplifying compassion towards others as an implementation of the knowledge from Surah Al-Fatihah, and comprehending and demonstrating cooperation and mutual assistance as an implementation of the understanding. From the understanding of Surah Al-Ma'idah:2, knowing and narrating the exemplary stories of Prophet Muhammad, having a caring attitude towards others as an implementation of the knowledge from Surah Al-Kawthar, practicing virtues and avoiding reprehensible behaviors as an implementation of the understanding of prayer, possessing courteous behavior and respecting good friends at home, school, and in the community as an implementation of the knowledge from Surah Al-Hadid (57):9, recognizing the existence of Allah through observing creations around the house and school, knowing the attitude of courtesy and respect from Prophet Muhammad, exemplifying courteous behavior and respect towards friends, both at home, school, and the surrounding community, possessing and demonstrating a tolerant and sympathetic attitude towards others as an implementation of the understanding from Surah Al-Kafirun and Al-Ma'idah (5):2, having and exemplifying harmonious living as an implementation of the knowledge from Surah Al-Hujurat (49):13.

In instilling moderate Islamic values in students, it is essential to emphasize that the relationship between the Muslim community and non-Muslims, both within and outside the country, is based on the principle of peaceful coexistence following human nature. This reflects the universal nature of Islamic teachings as a mercy for all world inhabitants. In the principles of Islamic teachings, there should be no coercion or assimilation. On the contrary, if Muslims are oppressed, maintaining rights and sovereignty becomes an alternative solution, as stated in the verse: "So whoever has assaulted you, then assault them in the same way that they have assaulted you."

From the above explanation, it is clear that Islam is a peaceful religion and a righteous mission that highly upholds responsible freedom. Another reflection of the freedom of religion is that Islam fully protects the rights of the dhimmis, which refers to non-Muslims who have made peaceful agreements within the territories of the Islamic community. It states in verse: "Allah does not forbid you from those who do not fight you because of religion and do not expel you from your homes - from being righteous toward them and acting justly toward them. Indeed, Allah loves those who act justly."

Various forms of implementation have been identified based on the research findings on the focus of cultivating moderate Islamic values. One form is through the implementation of moderate Islam SD Alkhairaat. Through careful planning and formulation, an academic core program has developed, which involves classroom learning and spiritual and religious activities to shape a culture or habit of worship. Thus, the researcher assesses that the implementation process with activities is part of the application and aligns with the aspects and strategies according to existing opinions or theories.

In their daily practice, as demonstrated by the teachers of faith and morality, they show respect and maintain interactions with fellow students in school without distinguishing their backgrounds and abilities.

C. Analysis of Moderate Islamic Values Implementation in the Teaching Process

Based on the research findings regarding the evaluation of the implementation process, the assessment at SD Alkhairaat divides itself into three forms: program evaluation, learning process, and evaluation of learning outcomes. The program evaluation is conducted intensively and comprehensively once a year, involving teachers, principals, and the foundation. The assessment of

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the learning process consists of questioning and answering, as well as solving problems to assess the absorption of learning materials. Lastly, there is the evaluation of learning outcomes through test models, such as mid-semester exams and final semester exams, which help measure students' level of achievement in learning outcomes. According to Anas Sudijono, the scope of evaluation in education in schools includes three main components: assessment of the teaching program, evaluation of the implementation process, and evaluation of learning outcomes. From this, the researcher concludes that monitoring and evaluation, commonly abbreviated as "money," conducted annually involving principals and teachers, are part of the program evaluation, and rewards and punishments are associated with the implementation process assessment.

Based on existing research and theories, the researcher concludes that the evaluations conducted at SD Alkhairaat encompass program evaluation, implementation process evaluation, and achievement level evaluation, as expected in educational institutions, as conveyed by Anas Sudijono. In terms of balance, educators and students have implemented all aspects of moderate Islamic teachings independently according to their abilities and by emulating the values of moderation through peers and parents. In terms of tolerance, educators and students are highly capable of understanding their peers' diverse nature and character and do not disturb those engaged in worship.

V. CONCLUSIONS

The implementation of moderate Islamic values at SD Alkhairaat could not separate itself, which has been determined by the government. Moderate educational values, as outlined in legislation, such as character education encompassing religious, nationalistic, cooperative, integrity, and independent aspects, are all summarized and simplified. Implementing moderate Islamic values in character education is reflected in integrated programs within extracurricular activities, school culture, co-curricular activities, and extracurricular activities. In classroom teaching, one of the strategies used is through morning activities aimed at developing students' personal and national character. These morning activities include lining up and praying before entering the classroom, tidying up shoes in designated areas, and greeting each other.

REFERENCES

- 1) Alamsyah, Moh Ayuub, Pettalongi, Sagaf S, & Nurdin, Nurdin. (2023). *Peran Teknologi Pendidikan Dalam Meningkatkan Minat Belajar Siswa Di Era Society 5.0*. Paper presented at the Prosiding Kajian Islam dan Integrasi Ilmu di Era Society (KIIIES) 5.0, Palu.
- 2) Arif, Arifuddin M, Nurdin, Nurdin, & Elya, Elya. (2023). Character Education Management at Islamic Grassroot Education: The Integration of Local Social and Wisdom Values. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam*, 7(2), 435-450.
- 3) Fathuddin, Fauziah, Nurdin, Nurdin, & Rustina, Rustina. (2023). The Challenges of Teaching Islamic Education In the Millennial Generation Era *International Journal of Contemporary Islamic Education*, 5(1), 1-14.
- 4) Freedman, Amy L. (2009). Civil Society, Moderate Islam, and Politics in Indonesia and Malaysia. *Journal of Civil Society*, 5(2), 107-127. doi:10.1080/17448680903154907
- 5) Jumahir, Jumahir, Nurdin, Nurdin, Pettalongi, Adawiyah, Fitri, Anindya, & Aftori, Rohmatika. (2023). Religious Culture Implementation in State Islamic Senior High School in Indonesia. *Research and Analysis Journal*, 6(2), 19-26.
- 6) Makmur, Makmur, Nurdin, Nurdin, & Pettalongi, Adawiyah. (2022). *Islamic Education Values In Sintuwu Maroso Culture*. Paper presented at the Proceeding of International Conference on Islamic and Interdisciplinary Studies, Palu.
- 7) Muhaimin, Alif, Nurdin, Nurdin, & Alhabsyi, Firdiansyah. (2023). *Ilmu Pengetahuan dan Teknologi Menurut Pandangan Islam*. Paper presented at the Kajian Islam dan Integrasi Ilmu di Era Society (KIIIES) 5.0, Palu.
- 8) Nurdin, Nurdin. (2023). *Tantangan Guru Dimasa Industri 4.0: Pengetahuan dan Ketrampilan Baru*. Paper presented at the Kajian Islam dan Integrasi Ilmu di Era Society (KIIIES) 5.0, Palu.
- 9) Nurdin, Nurdin, Agam, Muhammad, & Adawiyah, Adawiyah. (2023). *Geographic Information System Continuance Adoption and Use to Determine Bidikmisi Scholarship Recipients Distribution*. Paper presented at the Proceedings of the 2022 International Conference on Computer, Control, Informatics and Its Applications, Virtual Event, Indonesia. <https://doi.org/10.1145/3575882.3575953>
- 10) Nurdin, Nurdin, Pettalongi, Sagaf S, Ahsan, Muhammad Nur, & Febrianti, Vindy. (2023). Factors affecting students' continuance intention to use teaching performance assessment application from technology continuance theory. *International Journal of Electrical and Computer Engineering (IJECE)*, 13(5), 5342-5353.
- 11) Nurdin, Nurdin, Scheepers, Helana, & Stockdale, Rosemary. (2022). A social system for sustainable local e-government. *Journal of Systems and Information Technology*, 24(1), 1-31. doi:10.1108/JSIT-10-2019-0214

Implementation of Moderate Islamic Values at Elementary Schools in Indonesia

- 12) Nurdin, Nurdin, Stockdale, Rosemary, & Scheepers, Helana. (2013). *The Use of Social Media to Gather Qualitative Data: A Case of Government E-Procurement Implementation and Use*. Paper presented at the 24th Australasian Conference on Information Systems (ACIS)
- 13) Nurfaiah, Nurfaiah, Nurdin, Nurdin, & Alhabsyi, Firdiansyah. (2022). *Management of Al-Qur'an Learning at One Day One Juz Palu Community*. Paper presented at the Proceeding of International Conference on Islamic and Interdisciplinary Studies, Palu.
- 14) Rahmawati, Rahmawati, Nurdin, Nurdin, & Pettalongi, Adawiyah. (2022). *Science Learning Methods in Kindergarten Schools (Study at: Khalifah Kindergarten in Palu City 2021)*. Paper presented at the Proceeding of International Conference on Islamic and Interdisciplinary Studies, Palu.
- 15) Somer, Murat. (2007). Moderate Islam and secularist opposition in Turkey: implications for the world, Muslims and secular democracy. *Third World Quarterly*, 28(7), 1271-1289. doi:10.1080/01436590701604888



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Evaluation of Primary School Physical Education Facilities and Infrastructure in the Regional Office of Education in Patuk Sub-District, Gunungkidul District



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ABSTRACT: The purpose of this study was to evaluate the facilities and infrastructure used in learning Physical Education Sports and Health in Elementary Schools in the Kapanewon Patuk Regional Office of Education, Gunung Kidul using the CIPP model which includes aspects of Context, Input, Process, and product. The research subjects consisted of principals and teachers. Data collection methods included documentation, observation, and interviews. Qualitative and quantitative data were analyzed using descriptive techniques. The results showed that the condition and feasibility of facilities and infrastructure for game sports are still not good with an interval value of 49%, while the interval value for gymnastics and athletics are 31% and 26% respectively, with the overall interval value of the three types of sports is 35%. Fulfillment of standardization is also still not good with a value of 27%. However, the implementation of Physical Education, Sports, and Health learning is good with a score of 67% and the learning outcomes of Physical Education, Sports, and Health reached 75%. Therefore, although there are still shortcomings, the creativity and innovation of teachers in teaching have made the learning process of Physical Education, Sports, and Health run well and the fulfillment of the minimum completeness criteria for Physical Education, Sports, and Health subjects is fulfilled. The suggestion given is that there is a need for improvement and improvement in facilities and infrastructure, fulfillment of standards stipulated in regulations, use of appropriate learning methods and techniques, and increasing student involvement in sports activities to improve the quality of learning Physical Education, Sports, and Health in Elementary Schools in the Kapanewon Patuk Regional Office of Education, Gunungkidul Regency. In addition, special improvements need to be made to improve students' learning achievements in sports that are still poor through additional training or intensive activities.

KEYWORDS: Evaluation, Learning, Physical education, sport and health, Elementary school, Gunungkidul Regency

INTRODUCTION

Physical education, sport and health is one of the important components of education in Indonesia (Suherman et al., 2019); (Wibowo, 2019); (Adi & Fathoni, 2019). At the elementary school level, learning physical education, sports and health must be done well so that students can grow and develop optimally. The development of children's motor skills in childhood can improve physical health and influence future long-term health outcomes (Cattuzzo et al., 2016). One of the important factors that influence the success of learning physical education, sports and health is facilities and infrastructure. Lack of support and resources is a barrier to physical activity promotion (Hills et al., 2015). Facilities and infrastructure have a significant influence on student learning outcomes (Puspitarini & Hanif, 2019). And there is an influence between the quality of facilities and infrastructure on student interest in learning (Eze et al., 2018).

The needs of existing facilities and infrastructure must adjust the education curriculum and standard guidelines used. The standard guidelines for facilities and infrastructure for learning physical education, sports and health are regulated in the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007. Procurement and use of facilities and infrastructure in schools requires a process, which starts from planning, procurement and arrangement, use and elimination. In the context of the Patuk Sub-district Education Office, Gunungkidul Regency, the evaluation of Physical Education, Sports and Health facilities and infrastructure in elementary schools needs to be carried out to determine the extent to which the standards that have been set are met. By evaluating the facilities and infrastructure, the existing shortcomings and strengths can be identified and recommendations can be made to improve the quality of physical education, sports and health learning in primary schools.

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The evaluation program of physical education, sport and health facilities and infrastructure in elementary schools in the Patuk Sub-District Education Office, Gunungkidul Regency aims to evaluate the extent to which the standards of physical education, sport and health facilities and infrastructure set by the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007 concerning Facilities and Infrastructure Standards for Elementary Schools/Madrasah Ibtidaiyah, Junior High Schools/Madrasah Tsanawiyah, and Senior High Schools/Madrasah Aliyah are met by elementary schools in the region. The evaluation in this study used the CIPP (Context, Input, Process, and Product) model. Evaluation of the context in the form of the elementary school environment and the surrounding community and the condition of existing facilities and infrastructure. Input evaluation in the form of Physical Education, Sports, and Health facilities and infrastructure available at elementary schools. Evaluation of the process of Physical Education, Sports, and Health in elementary schools in the form of learning methods, teacher competence, and student involvement in learning, and evaluation of the products that have been achieved from the learning. Based on the results of the evaluation, recommendations will be made to improve the quality of physical education, sports and health learning in elementary schools.

This study aims to (1) Evaluate the availability of physical education facilities and infrastructure for sports and health in elementary schools in accordance with the standards set by the government. (2) Assessing the adequacy and quality of facilities and infrastructure available to support physical learning activities of sports and health in elementary schools. (3) Analyze the effectiveness of the use of physical education facilities and infrastructure for sports and health in elementary schools in improving the quality of learning and student achievement. (4) Provide recommendations and suggestions for the improvement and development of physical education, sport and health facilities and infrastructure in elementary schools in accordance with current needs and challenges.

METHODS

The method in this study is a program evaluation conducted using the CIPP (Context, Input, Process, and Product) model. (Umam & Saripah, 2018); (Darma, 2019). This research was conducted in 24 elementary schools in the Korwil Bidang Pendidikan of Patuk Sub-district, Gunungkidul Regency, Yogyakarta Special Region. Criteria for evaluating physical education facilities and infrastructure in elementary schools in the Korwil of Patuk Sub-district Education in Table 1.

Table 1. Evaluation Criteria

Factors	Indicators	Data Sources
Contecxt	Condition of facilities and infrastructure	Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007
Input	Suitability of facilities and infrastructure	Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007
Process	Implementation of Learning	Ministry of Education and Culture Regulation 2016 number 22 on process standards
Product	Student learning achievement	School Criteria

RESULTS

Context Evaluation

The Patuk sub-district education office in Gunungkidul district is located in a mountainous area that has different characteristics from lowland areas. The majority of the population in this area earn a living as farmers or workers in the tourism sector. There are several natural and historical tourist attractions that are quite popular among local and international tourists such as beaches, caves, and historical sites. The evaluation of Physical Education, Sport and Health facilities and infrastructure in primary schools in this region will provide an overview of how good the sports and health facilities are in primary schools and how well they are used by students. It will also provide an overview of the availability of resources and support needed to improve the quality of physical and health education in primary schools in the region.

The Patuk Sub-district Education Office in Gunungkidul Regency has 24 primary schools, consisting of 22 public primary schools and 2 private primary schools. The total number of students enrolled in the 24 elementary schools is 2,391, while the number of teachers is 182. Overall the data can be explained that of the 23 components of facilities and infrastructure contained in the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of the Year if grouped into 3 (three) types of sports, namely game sports, gymnastics and athletics then categorized as follows:

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Table 2. Context Aspect

No.	Type of Sports	Value Interval	Description	Average
1	The game	49%	Good Enough	35%
2	Gymnastics	31%	Less Good	
3	Athletics	26%	Less Good	
Description				Less Good

Based on the Regulation of the Minister of National Education of the Republic of Indonesia No. 24, the interval value for game sports is 49%, which falls into the fair category, while the interval values for gymnastics and athletics are 31% and 26%, respectively, which fall into the poor category. On average, the overall interval value for the three sports is 35%, which also falls into the unfavorable category. Therefore, the context aspect in this study can be categorized as less good.

Input Evaluation

Evaluation of the input aspect in the form of the availability of Physical Education, Sports, and Health facilities and infrastructure available in elementary schools in the Education Korwil of Patuk District, Gunungkidul Regency which refers to the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007. It is known that data from 24 BASIC SCHOOLS that meet the completeness standards of volleyball are 3 (13%), soccer ball 3 (13%), basketball 1 (4%), volleyball court 15 (63%), soccer field 8 (33%), basketball court (8%), mattress 21 (88%), jumping chest 2 (8%), jump rope 6 (25%), hoop 5 (21%), 9 (38%) plastic balls, 8 (33%) sticks, 5 (21%) stick bars, 2 (8%) wristbands, 2 (8%) gymnastics buildings, 8 (33%) javelins, 8 (33%) discs, 10 (42%) bullets, 13 (54%) relay sticks, 4 (17%) javelin fields, 3 (13%) discus fields, 3 (13%) bullet fields, 2 (8%) running tracks. It is concluded that on average, the fulfillment of the standardization of Physical Education, Sports, and Health Facilities and Infrastructure in Primary Schools in the Patuk District Education Office, Gunungkidul, which refers to the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007 is included in the "not good" category.

Process Evaluation

Process evaluation in this study is to evaluate the process of implementing Physical Education, Sports, and Health learning in elementary schools in the Patuk Regional Office of Gunungkidul Regency. The data results were obtained through a questionnaire sheet related to Physical Education, Sports, and Health learning which includes teaching methods and implementation of Physical Education, Sports, and Health Learning. From a total of 16 questions given to 24 Physical Education, Sports, and Health teachers in elementary schools in the Regional Office of Education, Patuk District, Gunungkidul Regency, it is known that the total score of the percentage value obtained is 67%. It is concluded that on average, the aspects of the learning implementation process of Physical Education, Sports, and Health in Primary Schools in the Regional Office of Education in Patuk District, Gunungkidul Regency are included in the "good" category.

Product Evaluation

The product aspect in this study is the learning value of Physical Education, Sports, and Health subjects that have been achieved by students. One of the indicators of Physical Education, Sports, and Health learning can be said to be successful if the achievement of students' learning achievements has met the minimum passing criteria that have been set. the passing criteria for Physical Education, Sports, and Health subjects in elementary schools in the Education Korwil of Patuk District, Gunungkidul is 70 for all elementary schools. The results of the product evaluation show that the average daily report card assessment for the odd semester for Physical Education, Sports, and Health subjects in students is known to have an average value of 75. From the results of product evaluations that have been carried out at 24 elementary schools in the Korwil Bidang Pendidikan Patuk District, Gunungkidul in the implementation of Physical Education, Sports, and Health learning that has been carried out is included in the good category.

DISCUSSION

Context Evaluation

Based on the research data, the condition of Physical Education, Sports, and Health facilities and infrastructure in elementary schools in the Patuk Sub-District Education Office, Gunungkidul can be categorized as poor. This can be seen from the interval value for the type of game sport which is included in the good enough category, while the interval value for gymnastics and athletics is 31% and 26% respectively which are included in the less good category. If calculated on average, the overall interval value of the three types of sports is 35%, which is also included in the unfavorable category. Therefore, it can be concluded that

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the context aspect in this study can be categorized as less good. Study conducted by (Mupa & Chinooneka, 2015) shows that there are several factors that contribute to students' failure in grade seven in Zimbabwe, such as inadequate preparation of learning media, limited learning resources, non-conducive learning environment, and lack of support for learning.

Physical Education, Sports, and Health facilities and infrastructure are available and used effectively to support educational activities at school, by considering needs analysis and priority scale of activities, teachers can plan physical learning in accordance with the needs of students and schools (Laar et al., 2021). To improve student achievement and school performance, one of the supporting factors is adequate infrastructure. Student achievement can be influenced by principal leadership and high or low teacher competence (Cansoy & Parlar, 2018). Teacher motivation can affect students' interest in learning through their enthusiasm in teaching that is felt by students. In this case, it is necessary to evaluate and improve the facilities and infrastructure for Physical Education, Sports, and Health in Elementary Schools in the Education Corwil of Patuk District, Gunungkidul Regency so that the interval value for gymnastics and athletics can be increased so that it can reach the good enough category. This is important to support teaching and learning activities in elementary schools so that students can get optimal learning experiences in sports.

Input Evaluation

Based on the evaluation of the input aspects in the form of the availability of Physical Education, Sports and Health facilities and infrastructure available in elementary schools in the Education Korwil of Patuk District, Gunungkidul, which refers to the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007, it can be concluded that the condition of Physical Education, Sports and Health facilities and infrastructure in elementary schools still needs attention and improvement. The existence of poor Physical Education, Sports, and Health equipment can affect students' interest and motivation in sports activities, students' sports skills and abilities, and the quality of sports education. Therefore, it is necessary to evaluate and improve the poor Physical Education, Sports and Health facilities and infrastructure to improve the quality of sports education in elementary schools in the Patuk Sub-District Education Office, Gunungkidul Regency.

Having various types of adequate physical education facilities and infrastructure will make the learning process more interesting. Conversely, if facilities and infrastructure are inadequate, student learning outcomes will be less than optimal. This opinion is in line with (Méndez-Giménez et al., 2023), which states that the availability of physical education facilities and infrastructure greatly affects the liveliness of students' movements. Therefore, the quantity and quality of physical education infrastructure in schools must be improved. From this description, it can be concluded that adequate physical education facilities and infrastructure in schools are very important to help students understand learning materials and have experience in using the physical education infrastructure that has been provided.

Process Evaluation

Based on the process evaluation in this study which evaluates the process of implementing Physical Education, Sports, and Health learning in Elementary Schools in Patuk Korwil, Gunungkidul Regency, it can be concluded that in general teachers use a variety of methods to conduct Physical Education, Sports, and Health learning in Elementary Schools, such as demonstrations and game methods that are in accordance with the characteristics of Physical Education, Sports, and Health learning which do a lot of practice in the field. Although there are several obstacles experienced by teachers, such as limited time and infrastructure, teachers feel effective in implementing Physical Education, Sports, and Health learning, learning schedules, learning goals and objectives.

Based on the results of the questionnaire given to 24 Physical Education, Sports, and Health teachers, on average, the aspects of the learning implementation process of Physical Education, Sports, and Health in elementary schools in the Patuk District Education Office, Gunungkidul are included in the "good" category. This shows that the implementation of Physical Education, Sports and Health learning in these elementary schools has been running well and effectively, although there are some obstacles that must be overcome related to the availability of inadequate facilities and infrastructure. Professional teachers must have good teaching skills, have broad insight, master the curriculum, master learning media, master technology, have a good personality and be a good role model (Jafar Saud). In terms of learning methods, the conclusion shows that the variety of learning methods used by teachers, such as demonstrations, assignments to students, games, group discussions, and projects, provide varied learning experiences for students and can help increase student motivation and involvement in learning. Physical education is able to stimulate physical and non-physical aspects concerning work ability, thinking and skills so that the improvement of the quality of strong human resources can be achieved (Croston & Hills, 2017); (Claudia, 2022); (Zach & Rosenblum, 2021).

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In addition, the conclusion also shows the active involvement of teachers in learning Physical Education, Sports and Health, which is indicated by a fixed schedule for teaching, continuity of learning every week, and providing basic exercises as well as fitness and stretching exercises. This shows that there is careful and systematic planning in the implementation of learning. The role of the teacher as a facilitator has an influence on the effectiveness of student learning. In terms of learning design, the conclusion shows that Physical Education, Sports and Health learning is designed to be fun and has clear and specific goals. Fun learning design can help increase students' motivation and engagement in learning, while clear and specific objectives can help focus students on achieving learning objectives.

Attention is paid to the health and comfort of students during the learning process. All students are given time to rest, which can help reduce fatigue and increase student comfort during the learning process. Assessment of learning outcomes is one of the important aspects in the learning process carried out by Elementary School Physical Education, Sports and Health teachers and is part of a teacher's performance. One of the teacher's performance is to evaluate and provide program feedback in learning. Evaluations conducted by teachers are used to strengthen the quality of teaching. Evaluation of the implementation of learning programs is important, this is important because it is a process of assessing the extent to which a program is implemented. (Ware et al., 2018).

Product Evaluation

From the data provided, there are two things that need to be considered, namely the condition of Physical Education, Sports, and Health facilities and infrastructure in elementary schools in the Regional Office of Education, Patuk District, Gunungkidul which are still inadequate, but on the other hand, the learning outcomes of Physical Education, Sports, and Health in these elementary schools are included in the good category by meeting the minimum completeness criteria. The analysis that can be done is that although the facilities and infrastructure for Physical Education, Sports, and Health in these elementary schools are still inadequate, the learning process of Physical Education, Sports, and Health in these elementary schools can be said to be good because teachers succeed in using various kinds of learning methods, such as demonstrations and game methods that are in accordance with the characteristics of Physical Education, Sports, and Health learning which do a lot of practice in the field. However, it should be noted that inadequate Physical Education, Sports and Health facilities and infrastructure can affect students' interest and motivation in sports activities, students' sports skills and abilities, and the quality of sports education. Therefore, it is necessary to evaluate and improve the inadequate Physical Education, Sports and Health facilities and infrastructure in order to support teaching and learning activities in elementary schools so that students can get optimal learning experiences in sports.

CONCLUSIONS

Based on the analysis that has been carried out, there are several important findings that can be taken as material for evaluation and improvement in the future: (1) Context Aspect; The condition of Physical Education, Sports, and Health facilities and infrastructure in elementary schools in the Patuk District Education Office, Gunungkidul Regency needs to be considered and improved, especially for gymnastics and athletics which are still in the poor category. By increasing the availability of adequate facilities and infrastructure, it is hoped that it can increase students' interest and motivation in sports activities and the quality of sports education. (2) Input Aspects; The condition of Physical Education, Sports, and Health facilities and infrastructure in elementary schools in the Patuk District Education Office, Gunungkidul Regency is in the poor category, so it is still very necessary to pay attention and improve in accordance with the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007. This improvement needs to be done so that students can get an optimal learning experience in the field of sports. (3) Aspects of Process; In general, the process of implementing Physical Education, Sports, and Health learning in elementary schools in the Education Corwil of Patuk District, Gunungkidul Regency has been running well and effectively. Teachers use a variety of learning methods and techniques that are in accordance with the characteristics of Physical Education, Sports, and Health learning, although there are several obstacles such as limited time and infrastructure that must be overcome. (4) Product Aspect; The results of the product evaluation show that the learning of Physical Education, Sports, and Health in elementary schools in the Education Korwil of Patuk Sub-district, Gunungkidul Regency is included in the good category. However, there are differences in interval values for types of sports that need to be considered, so that improvements can be made to improve student learning achievement in these types of sports.

Based on the existing conclusions, it is recommended that several corrective actions can be taken in elementary schools in the Patuk District Education Office, Gunungkidul Regency, including: (1) Improving the condition of Physical Education, Sports, and Health facilities and infrastructure, especially for gymnastics and athletics which are still inadequate. By increasing the

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availability of adequate facilities and infrastructure, it is hoped that it can increase students' interest and motivation in sports activities and the quality of sports education. (2) Maintain the condition of Physical Education, Sports, and Health facilities and infrastructure so that they always meet the standards set out in the Regulation of the Minister of National Education of the Republic of Indonesia Number 24 of 2007. This improvement needs to be done so that students can get an optimal learning experience in sports. (3) Ensure that Physical Education, Sports, and Health teachers use learning methods and techniques that are in accordance with the characteristics of Physical Education, Sports, and Health learning and take into account the limited time and infrastructure. In addition, student involvement in sports activities can be increased by organizing sports activities that are more varied and interesting for students. (4) Improvements can be made to improve the achievement of student learning achievements in the types of sports whose interval values are still not good. One way that can be done is to provide additional training or hold more intensive activities in that type of sport.

REFERENCES

- 1) Adi, S., & Fathoni, A. F. (2019). Development of Learning Model Based on Blended Learning in Sports School. *5th International Conference on Physical Education, Sport, and Health (ACPES 19)*, 8–12.
- 2) Cansoy, R., & Parlar, H. (2018). Examining the relationship between school principals' instructional leadership behaviors, teacher self-efficacy, and collective teacher efficacy. *International Journal of Educational Management*, 32(4), 550–567.
- 3) Cattuzzo, M. T., dos Santos Henrique, R., Ré, A. H. N., de Oliveira, I. S., Melo, B. M., de Sousa Moura, M., de Araújo, R. C., & Stodden, D. (2016). Motor competence and health related physical fitness in youth: A systematic review. *Journal of Science and Medicine in Sport*, 19(2), 123–129.
- 4) Claudia, W. M. Y. (2022). The physical education pedagogical approaches in nurturing physical literacy among primary and secondary school students: A scoping review. *International Journal of Educational Research*, 116, 102080.
- 5) Croston, A., & Hills, L. A. (2017). The challenges of widening 'legitimate' understandings of ability within physical education. *Sport, Education and Society*, 22(5), 618–634.
- 6) Darma, I. K. (2019). The effectiveness of teaching program of CIPP evaluation model. *International Research Journal of Engineering, IT and Scientific Research*, 5(3), 1–13.
- 7) Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). The utilisation of e-learning facilities in the educational delivery system of Nigeria: a study of M-University. *International Journal of Educational Technology in Higher Education*, 15(1), 1–20.
- 8) Hills, A. P., Dengel, D. R., & Lubans, D. R. (2015). Supporting public health priorities: recommendations for physical education and physical activity promotion in schools. *Progress in Cardiovascular Diseases*, 57(4), 368–374.
- 9) Laar, R. A., Ashraf, M. A., Ning, J., Ji, P., Fang, P., Yu, T., & Khan, M. N. (2021). Performance, health, and psychological challenges faced by students of physical education in online learning during COVID-19 epidemic: A qualitative study in China. *Healthcare*, 9(8), 1030.
- 10) Méndez-Giménez, A., Carriedo, A., Fernandez-Rio, J., & Cecchini, J.-A. (2023). Self-made material in physical education: Teacher perceptions of the use of an emerging pedagogical model before and during the COVID-19 pandemic. *European Physical Education Review*, 29(1), 107–124.
- 11) Mupa, P., & Chinooneka, T. I. (2015). Factors Contributing to Ineffective Teaching and Learning in Primary Schools: Why Are Schools in Decadence?. *Journal of Education and Practice*, 6(19), 125–132.
- 12) Puspitarini, Y. D., & Hanif, M. (2019). Using Learning Media to Increase Learning Motivation in Elementary School. *Anatolian Journal of Education*, 4(2), 53–60.
- 13) Suherman, A., Supriyadi, T., & Cukarso, S. H. I. (2019). Strengthening national character education through physical education: An action research in Indonesia. *International Journal of Learning, Teaching and Educational Research*, 18(11), 125–153.
- 14) Umam, K. A., & Saripah, I. (2018). Using the Context, Input, Process and Product (CIPP) model in the evaluation of training programs. *International Journal of Pedagogy and Teacher Education*, 2, 19–183.
- 15) Ware, P., Ross, H. J., Cafazzo, J. A., Laporte, A., Gordon, K., & Seto, E. (2018). Evaluating the implementation of a mobile phone-based telemonitoring program: longitudinal study guided by the consolidated framework for implementation research. *JMIR MHealth and UHealth*, 6(7), e10768.
- 16) Wibowo, Y. G. (2019). Managing sport for healthy lifestyle: A brief review and future research directions. *Indonesian Journal of Sport Science and Coaching*, 1(2), 57–64.

Evaluation of Primary School Physical Education Facilities and Infrastructure in the Regional Office of Education in Patuk Sub-District, Gunungkidul District

- 17) Zach, S., & Rosenblum, H. (2021). The affective domain—a program to foster social-emotional orientation in novice physical education teachers. *International Journal of Environmental Research and Public Health*, 18(14), 7434.



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The Determinants of Accounting Choices within the SMEs in Cameroon



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ABSTRACT: Business management is a matter of business survival based on accounting choices. This paper examines the determinants of accounting choices above a mere financial policy view. A literature review on the factors influencing a company's performance, helps highlighting stewardship and governance theory in order to explain the multidimensionality of accounting choices that can enlighten the understanding of the links between ... and the determinants within companies. By comparing samples of Small and Medium Enterprises in business with those that have ran out, we search the differences between both groups in terms of characteristics inherent to accounting choices. The empirical is based on two categories of the SMEs, on a sample of 189 from 2016 to 2018. The results highlight that accounting choices are correlated with the size of the SME as a factor encouraging the company's financial policy.

KEY WORDS: accounting, choices, determinants, Small and Medium-sized, Enterprises.

INTRODUCTION

In most of the economies globally, SMEs are considered a genuine vector for the creation of job and wealth and, are a driving force to growth as well as an important actor for poverty alleviation. However, to become an emergent country, Cameroon must have an economy that is able to generate more wealth for her prosperity and also face the global competition, herein focussing mainly on Small and Medium-sized Enterprises. But, given their current performances, these enterprises seem to be not enough to ensure a strong and competitive economy to Cameroon. Therefore, in 2008, the State of Cameroon launched an official reform, which allowed reducing the time limit for setting-up an enterprise, from several months to just 38 days. These simplification and digitization of the creation procedure arranged by the Ministry of Small and Medium-sized Enterprises, Social Economy and Handicrafts (MINPMEESA) has resulted in the multiplication times 28 of the number of enterprises created between 2010 and 2015. Further to the reduction of time limit for creation, the Enterprise Creation Pilot Centres (CPCE) have contributed to the reduction of operating costs. This costs went from 250 000 FCFA before 2010 to about 50 000 FCFA currently. Suddenly, SMEs created between 2010 and 2015 are counted almost 15219 according to the figures published by The SME Promotion Agency (APME). All the same, we went from 11498 SMEs in 2014 to 13374 SMEs in 2015 and to 15219 in 2016.

There is probably no doubt observing that this strong outburst of enterprises brings along severe sustainability difficulties. Therefore, the CAMERCAP (2016) outlines that "over 10 enterprises created between 2010 and 2015, 7 did not survive until May 2016 and are inexistent within the files of Directorate General of Taxes (DGT) that month". However The National Institute of Statistics (INS) assesses the extinction rate of SMEs to 72.24% between 2010 and 2015. Among the private sector, there is much extinction of enterprises such as *Complexe Chimique Camerounais (CCC)* and especially in the sector of financial institutions. In less than four years, many enterprises have dealt with infant mortality among which are: GBF (Goldy Businessmen Fund) in 2008, COFINEST (*Compagnie Financière de l'Estuaire*) in 2011, FIFFA (First Investment For Financial Assistance) in 2012 and, CAPCOL (*Caisse Populaire Coopérative du Littoral*) in 2012 (Okah-Efogo & Okah-Atenga, 2013). One of the reasons stated to justify this early mortality of SMEs comes from the accounting choices and methods they adopt, that aim more to shape the accountign figures in order to give the information according to managers's will. Similarly, the results of the RGE (2009) show that 13% of SMEs in Cameroon keep accounts within the meaning of OHADA accounting law and most outsource the accounting function to accountancy firms. Although not universally accepted, business performance is said to depend on certain management accounting indicators, including accounting choices and methods. According to Casta and Ramond (2009), accounting choices include all decisions that influence the figures and/or modify the content and form of the financial statements. There may therefore be

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differences in a company's performance depending on the accounting choices and methods it adopts, hence the need to work on the accounting choices and performance of SMEs in Cameroon.

SMEs in Cameroon are characterised by many difficulties such as accounting information fraud and falsification of accounting choices that sometimes lead to awkward situations resulting into bankruptcy for some of them. Various consequences stem out of those difficulties such as: the high level of indebtedness, negative results, closure of business, etc. researcher did not stay unconcerned toward all those problems faced by SMEs. In Cameroon, many research work have suggested solutions to those problems. Tchamanbe (2002), Nkakleu (2003), Wamba (2002, 2012, 2013, 2014), Feudjo and Tchankam (2013) have argued that new mechanisms need to be put in place to encourage banks, which are still over-liquid, to have confidence in local businesses and finance their activity and growth. Ndong (2004) goes on to suggest that SMEs should make every effort to optimise the use of computers, which could thus become a genuine tool for competitiveness and performance. Iribarne (2006) believes that "what cannot be measured cannot be improved". Hence, to improve performance, it is important for a company to measure the results.

The accounting choices made by the managers are part of the overall company's accounting policy. However, poor performance can lead managers to amend the company's accounting choices. This drives our interest in the accounting choices that maximise the company's performance. Based on the above, our work focuses on accounting choices in relation to the performance of SMEs in Cameroon. Our research problem is summarised in the following main question: What factors determine the choice of accounting methods?

The aim of this research is to assess the influence of accounting choices on the performance of small and medium-sized enterprises in Cameroon. We will then present the accounting choices indicators, a review of the literature, the methodology as well as the outcomes.

1. Accounting choices indicators

Saada (1995) identifies four accounting methods to analyse the result strategies: the depreciation system, the depreciation period of the goodwill, the inventory valuation method and the inclusion of the retirement commitments.

1.1. Depreciation methods or systems

Each company is free to choose their own depreciation method. The decision to apply either method must be disclosed in the notes to financial statements, together with the depreciation period. The various methods used in SYSCOHADA (the accounting system adopted or recommended by the uniform act No. 7 on the Organization and Harmonization of Accounting) are the following:

Constant or straight-line depreciation: this is the most commonly used method of calculation. Every year, fixed assets are depreciated at the same rate and on the same basis. If the asset is acquired during the year, the time taken is the period between the first day of service and the end of the year. The depreciation period for the asset is determined by the tax authorities on the basis of its presumed useful life.

-Diminishing balance or declining balance depreciation: this is where the cost of an investment is spread over a given period, so that the cost is higher at the beginning than at the end. It is characterised by the application of a constant rate to a declining value. As a result, the declining-balance annuity is decreasing, which is different from the straight-line annuity, which is constant. When a country's tax legislation authorises declining balance depreciation, it allows companies to increase the amount of subsidies and, therefore the costs, in the first few years. As a result, companies paying less tax on their profits will be able to recoup their investment more quickly.

1.2. The depreciation period of the goodwill

The goodwill represents the difference between the net assets of a company's balance sheet and its market value, or the over-rate corresponding to the excess of the acquisition cost at the time of a shareholding acquisition or merger. Depreciation spreads the cost of acquiring a fixed asset over its useful life or probable useful life, or either, on the economic life of an asset. The useful life depends on technical and economic wear and tear, while the economic life may be expressed in units of time, units of consumption or a combination of both:

-Simple life: in this case, depreciation expressed as a number of years is used as the basis for calculating the useful life. The company expects to use up its entire stock of services over a number of years;

-Purely quantitative use: the asset's stock of services is expressed in quantitatively measurable units;

-A combination of duration and use: life is expressed in units of time, on the one hand, and in units of consumption, on the other.

1.3. The inventory valuation method

In terms of inventory management, the following methods are used to valuate outflows when calculating the cost of goods sold after storage:

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The Weighted Average Cost or Weighted average unit cost (WAC/WAUC) method: this is generally used to value non-perishable materials inventory that can be stored over a long period. The WAUC method is divided into two methods:

the periodic WAUC method, where outflows are valued at a weighted average unit cost of goods received + initial stock, calculated over a monthly, quarterly or annual period, depending on the company's choice.

the WAC (or WAUC) method after each entry, where outputs are valued at the latest weighted average unit cost calculated after each goods receipt.

The first-in, first-out (FIFO) method: it is more commonly used to assess the value of the outflows of perishable products that are not recommended for long storage because of a loss of value or quality.

The last-in, first-out (LIFO) method: unlike the FIFO method, the LIFO method involves calculating the value of consumption on the assumption that batches entered last will be taken out first. The storage of certain categories of goods is strictly governed by this rule, because the longer they remain in the storage areas, the more quality and value they acquire. In times of inflation, it smoothes out losses by applying the current market price. The LIFO method has the advantage of being linked to the prices' variations.

Very often, an SME will use all three of these methods, depending on the type of materials it buys or sells.

1.4. Recognition of the retirement commitments

Generally speaking, retirement systems are designed for the formal sector (state employees, private sector employees and certain specific trades).

In Anglo-Saxon countries, the retirement system is designed around the Bismarckian model¹. It refers to a compulsory retirement scheme managed by the State's companies (institutions), which often have legal personality and financial autonomy, and an optional retirement scheme managed by private companies, in this case insurance companies (Bimeme & Ongono, 2021; Gbongue & Abderrahin, 2015).

- **Compulsory retirement schemes:** in the Inter-African Conference on Social Security (CIPRES) zone, these corresponds to the basic scheme and covers only employees in the formal sector (public and private sector employees). This retirement system is managed on a pay-as-you-go basis, meaning that retirees' pensions are financed directly by contributions taken at the same time from the working population affiliated to the system.
- **Optional retirement scheme:** this is a voluntary retirement scheme, not governed by the laws of the country concerned. It is provided by private insurance companies controlled by CIMA (Inter-African Conference on Insurance Markets). Under this scheme, employees must build up savings during their working life with a view to receiving a capital sum or pension when they retire. Here, there are two possible methods of financing pensioners: the first is self-financing (each individual finances his or her own retirement) and the second is organised within a company or a sector of activity, granting each of the members of these schemes a supplement to social security.

Cameroon's social security system is a social insurance system and comprises two schemes: the scheme for workers covered by the Labour Code, managed by the National Social Insurance Fund (NSIF); and the scheme for civil servants and similar staff, managed by the State (Ministry of the Economy and Finance). In Cameroon, the basic retirement scheme is compulsory, defined-benefit and funded on a pay-as-you-go basis.

2. The determinants of accounting choices with regard to the theory of transaction costs.

The concept of transaction cost was first introduced by Ronald Coase in 1937. The main sources of transaction costs are performance ambiguity and goal incompatibility, which characterise a situation where one of the parties intends to promote its own interests to the detriment of the other (Bowen and Jones, 1986). It sets out the dynamics of the social relationships involved in the exchange relationship. It is thanks to the work of Williamson (1975) that the concept of transaction cost is now fully understood. Thanks to this concept, transaction cost theory is able to account for the existence of a firm in a market economy. According to Williamson (1975), opportunism involves a strong pursuit of self-interest, which occurs when parties make unfulfilled promises to each other in order to maximise their returns, each at the expense of the other. This author explains transaction costs based on the limited rationality and opportunism of agents.

2.1. The principle of bounded rationality

Herbert Simon is the founding father of the principle of bounded rationality. This principle states that individuals do not have what it takes to make a purely rational choice. However, individuals (managers) have to make decisions in an unclear context, which forces them to opt for certain rules or attitudes that would not be the most appropriate in a situation where "everything would be perfectly clear".

This model is based on the concept of Chancellor Bismarck. It is a social protection (unemployment, family responsibilities, sickness).

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2.2. Agent opportunism

According to Williamson (1994) opportunism is defined as "the pursuit of self-interest that includes the notion of deception". In this context, managers may seek to deceive other agents by trying, through accounting choices and methods, to increase their present profits at the expense of the firm's future results. Although the manager adopts his accounting choices to satisfy the expectations of shareholders, he may also adopt maximisation behaviour to divert his accounting choices in favour of increasing his remuneration. When remuneration is indexed to accounting indicators, managers will opt for accounting choices that increase profits (Watts & Zimmerman, 1986; Healy, 1985; Scott, 1997), such as capitalising intangible investments. To resolve the risk of managerial opportunism, agency mechanisms come into play, in particular financial reporting, which forces managers to act in the interests of shareholders.

2.3. Managers' incentives to certain accounting choices

A great deal of theoretical and empirical research has been carried out since the 1980s in the context of the many changes that have taken place in accounting and finance around the world (Gordon, 1964; Watts and Zimmerman, 1978, 1986, 1990; Fields *et al.*, 2001; Casta & Remond, 2009; Vidal, 2011). These studies analysed, among other things, accounting changes at the level of international accounting standard-setters and the international standard-setting process. They also analysed accounting changes at company level, either through the choice of one accounting option over another, or through the adoption of one set of standards over another. Smith & Watts (1992) consider that the theory of accounting choices is at the heart of the study of accountancy. As regards the choice of accounting methods, Casta and Ramond (2009) and Moumeni (2023) state that managers use this freedom to shape the presentation and content of the financial statements within a legal framework. These choices are representative in terms of financial reporting² and have an impact on the structure of the income statement, balance sheet and off-balance sheet items. Company directors tend to choose accounting practices that allow them to analyse their effects on results and on the financial information disclosed in the financial statements, and to manipulate the results published. For this reason, the objectives of the accounting policy and the nature of the managers' motives to make certain accounting choices vary from one company to another.

Watts & Zimmerman (1990) argue that observing and analysing the motivations behind a single accounting choice can reduce the explanatory power of tests, since managers use their discretionary powers over a portfolio of accounting choices permitted by the accounting framework. Although the manager adopts his accounting choices to satisfy shareholders' expectations, he may also adopt maximisation behaviour to divert these accounting choices to the benefit of increasing his remuneration. Here, managers have an interest in increasing results in order to maximise their remuneration. Hédi Turki and Ahmed Abdelmoula (2007) note that managers are motivated to activate intangible expenditure either to inform the market about the quality of their projects, or to escape the financial constraints imposed by debt contracts, or to satisfy an opportunistic behaviour on their part. The second type of motivation, which runs counter to the previous ones in terms of its effects, is the reduction of political costs. In this sense, the manager may have to make a trade-off between financial market information and political costs on the one hand, and between escaping the advent of "debt covenants" and reducing political costs on the other.

2.3.1. Accounting results policy

During the eighties, the problem of optimising accounting choices became much more acute with the emergence of a new form of accounting known as 'creative' accounting (Griffiths, 1986; Jameson, 1988; Smith, 1992; Bonnet, 1995), which has become the object of manipulation. Each country created its own rules and accounting language, which made it difficult to reconcile the financial data of companies of different nationalities. To solve this problem, the European Union imposed the application of common international accounting standards from 1 January 2005 for all companies making public offerings on a financial market in Europe. The IAS/IFRS transition period was a unique moment, and gave rise to a profound change in accounting policies for consolidated accounts. Certain standards offer options, i.e. the possibility of choosing between two accounting methods, and each company concerned must position itself within the options offered by the IAS/IFRS framework. Similarly, Hjelstrom & Schuster (2008) show that the political-contractual theory is not satisfactory for explaining the motivations behind the choice of accounting options when IAS/IFRS are first applied.

Some managers make accounting choices to minimise the company's results, while others do so to increase them. Given this diversity, Stolowy & Breton (2004) propose a typology that distinguishes between five types of accounting choices linked to the manipulation of results: earnings management, income smothering, big bath accounting, window dressing and creative accounting. Several theories have been mobilised to explain the motivations behind earnings manipulation and to provide a conceptual framework for analysing accounting practices based on agency theory.

²The aim of financial reporting, which is used by company management, is to give a true and fair view of a company's financial position.

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2.3.2. The determinants of accounting choices: what does agency theory have to say?

Founded by Jensen and Meckling (1976), agency theory highlights the conflicts of interest between shareholders and creditors, and the control mechanisms that the latter put in place to protect themselves against the transfers of wealth that could result from opportunistic decisions by managers. In other words, organisations are analysed in terms of conflicts of interest between principals and agents (Jensen and Meckling, 1976). This theory states that a system of profit-sharing for managers is a means of reducing the agency costs inherent in conflicts of interest between managers and shareholders. However, the presence of a profit-sharing scheme must have repercussions on the accounting choices made by managers, whose remuneration depends on accounting-based performance indicators. They see the firm as "a knot of contracts" in which individuals are bound by agency relationships. Consequently, insofar as the manager and the shareholder act with the aim of maximising their utility function, there is a risk that the manager will adopt behaviour that runs counter to the interests of the shareholder. This risk relates to the incomplete nature of the contracts, which leads to the existence of an asymmetry of information in favour of the manager. The owner-shareholder is at the heart of management and therefore possesses all the company's information.

To deal with this situation of opportunism, Bimeme (2023) believes that the owner-shareholder can put in place specific governance mechanisms in order to reduce or even limit the adoption of opportunistic behaviour by the manager. The agency costs resulting from these mechanisms can be divided into three categories. The first relates to monitoring costs (e.g. auditors' hours) and incentive costs (e.g. remuneration systems based on company performance), generated by the owner-shareholder, whose objective is to control the behaviour of the manager. For Bimeme (2020), the latter are clearance costs, borne by the manager, which aim to show the principal that he is not acting in an interest contrary to that of the shareholder (for example, the voluntary dissemination of information). The third and last point indicates that the persistent costs are linked to conflicts of interest between the shareholder and the executive, despite the efforts made to reduce these conflicts.

3. METHODOLOGY

The methodological framework enables us to present the research hypotheses, the approach used and the analysis tool, the econometric model and the variables in this model in turn.

3.1. Research hypotheses

The objective of this study is to evaluate the influence of accounting choices on the performance of SMEs in Cameroon. Three hypotheses follow from these objectives:

H1: accounting choices are determined by the financial factor of SMEs ;

H2: Accounting choices are determined by the economic factor of SMEs;

H3: accounting choices are determined by the social factor of SMEs.

3.2. Approach and analysis tool

The approach used is hypothetical-deductive and consists of using a questionnaire to collect data in the field from the individuals in our study sample, which is made up of 52 SMEs in the cities of Douala and Yaoundé. From an epistemological point of view, our research also adopts a positivist stance since we start from presumptions of knowledge (hypotheses) which we will verify empirically through the questionnaire survey.

As a sampling method, we used the non-probabilistic method of reasoned choice, which consists of using personal judgement to select the elements of the sample. The information gathered was then processed using STATA version 12.0 software. We used binary logistic regression analysis and significance tests to arrive at our results.

3.3. Econometric model

In this work, the model for analysing the influence of accounting choices on the performance (financial, economic or social) of SMEs is given by the following relationship:

$$\text{Perfi} = \beta_0 + \beta_1 \text{syst_amorti} + \beta_2 \text{durée_amorti} + \beta_3 \text{eng_retraite} + \beta_4 \text{magasin_stock}_i + \beta_5 \text{method_stock}_i + \beta_6 \text{cc_spéc}_i + \beta_7 \text{orient_cc}_i + \beta_8 \text{eval_imm}_i + \epsilon_i \quad (1)$$

Where perfi measures the performance of the SME. It is either financial, either economic or social. For reasons of insufficient data on the financial and social performance indicators, we have retained in this work only the model relating to economic performance. In fact, the rate of missing data on the accounting indicator (2) is given by :

And that of the analysis of the determinants of accounting choices (2) is given by :

$$\text{CC}_i = \beta_0 + \beta_1 \text{eff_pers}_i + \beta_2 \text{CA}_i + \beta_3 \text{sect_act}_i + \beta_4 \text{cc_en}_i + \beta_5 \text{oppo_inv}_i + \epsilon_i \quad (2)$$

3.4. The variables of this model

We have three types of variables in this work: dependent variables, control variables and explanatory variables;

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- The dependent variables: the variable measuring the economic performance of SMEs (Perfi), this variable is given by the change in the number of employees in the company, turnover and competitiveness;
- Explanatory variables: the variable measuring accounting choices in SMEs (CCI) Four indicators are used: the depreciation system, the goodwill amortisation period, the inventory valuation method and the recognition of retirement commitments;
- The control variables: the sector of activity, the size of the company (measured by turnover and number of employees), the level of debt and the investment opportunity.

4. RESULTS OF THE ANALYSIS

These results analyse the relationship between accounting choices and the performance of SMEs in Cameroon on the one hand, and structural contingency factors and accounting choices on the other.

Table 1: logistic regression model

	Economic performance		ROE (Return on Equity)		ROI (Return on Investment)		RE (Revenue)		Accounting choices related to social objectives	
	marginal Effective (dy/dx)	Standard deviation	marginal Effective (dy/dx)	Standard deviation	marginal Effective (dy/dx)	Standard deviation	marginal Effective (dy/dx)	Standard deviation	marginal Effective (dy/dx)	Standard deviation
Degrassive depreciation system	0.0634291	0.06645	0.5840022***	0.20945	-0.0006073	0.04716	-0.690025**	0.19963	-0.441351**	0.20788
Depreciation duration between 5 and 10 years	-0.9990276***	0.00109	0.1493372	0.30021	0.998515***	0.00156	0.6453887*	0.34369	-0.1224834	0.3528
over 10 years	-0.9996947***	0.00035	0.1302849	0.3192	0.9995366***	0.00065	0.4950942	0.35235	-0.3876397	0.32632
Retirement commitment off-balance sheet	-0.195654	0.08024	-0.1432892	0.21694	0.021347	0.05629	0.2887046	0.26209	0.2108182	0.26649
commitment others (NSIF)	0.104157	0.1071	0.0515744	0.26402	0.0262809	0.0836	0.6674075***	0.18144	0.286616	0.32017
Method of inventory valuation - LIFO	-0.3355433	0.25121	0.7032875***	0.22525	0.2832729	0.30693	0.1145303	0.35336	-0.4821081**	0.188
- WAC	-0.0879392	0.08124	-0.3028245*	0.18105	-0.0032269	0.04916	0.2906331	0.3168	-0.4101961*	0.22043
Valuation of fixed assets: fair value	-0.128238	0.8352	-0.1790903	0.20627	0.116205**	0.05599	0.4211841*	0.239	-0.2855806	0.21213

4.1. The impact of accounting choices on the economic factor

The model is globally significant at 1% ($\chi^2(8) = 0.0000$). This model also has a good classification and this classification is 80%. The ROC curve has a value of 0.8252 and the more the ROC curve tends towards 1, the better the model is for forecasting. Adopting

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the declining balance depreciation system earlier than the straight-line depreciation system increases a company's chance of performing economically by 0.0634291. However, this result is not significant. When the depreciation period for fixed assets is less than 5 years, it has a negative impact on the company's economic performance. When it is between 5 and 10 years, it tends to reduce the company's economic performance by around 0.9990276, while remaining significant at 1%. A similar result is obtained when it is longer than 10 years. Similarly, recognising pension liabilities as a provision has a negative impact on the company's economic performance and recognising pension liabilities off-balance sheet reduces economic performance by 0.0195654. Although the inclusion of pension commitments in another form (e.g. CNPS insurance) is not significant, it improves economic performance by 0.0104157. The FIFO method has a negative impact on company performance. The LIFO method and the WAC method respectively reduce economic performance by around 0.3355433 and 0.0879392, all of which are insignificant. While the valuation of fixed assets using the historical cost method has a negative effect on performance, valuation using the fair value method reduces economic performance by 0.128238 and is not significant.

This result shows that accounting choices have a positive impact on economic performance. This result supports hypothesis H2.

4.2. The impact of accounting choices on the financial factor

This result concerns the following indicators: ROE, ROI and the operating profit.

4.2.1. The ROE

With regard to the significance of the model, it is globally significant at 10% ($\chi^2 = 0.0314$.) The model has a classification of 88.57%. The ROC curve has a value of 0.8859 and is good for forecasting.

While the linear depreciation system and the depreciation period of less than 5 years have a negative effect on the ROE, the degressive system, which is significant at 1%, as well as the depreciation periods of between 5 and 10 years and more than 10 years, improve the ROE by 0.5840022, 0.1493372 and 0.1302849 respectively, the last two not being significant. In the same way as taking account of pension commitments by means of provisions has a negative impact on ROE, taking account of pension commitments as off-balance sheet commitments reduces ROE by 0.1432892 while taking account of them in another form (CNPS for example) improves ROE by 0.0515744, both of which are not significant. Despite the significance of LIFO at 1% and CMP at 10%, the former increases a company's chance of performing well in terms of ROE by 0.7032875, while the latter reduces ROE by 0.3028245. The valuation of fixed assets using the historical cost method has a negative impact on ROE. This valuation tends to reduce ROE by 0.1790903 when it is carried out using the fair value method.

4.2.2. The ROI

This model is globally significant at 1%: $\chi^2 = 0.0000$ and has a good classification of 80%. The ROC curve has a value of 0.8400 and is good for forecasting.

The linear depreciation system negatively influences the ROI while the degressive depreciation system tends to reduce the ROI by 0.0006073 and is insignificant. While the amortisation period of less than 5 years and the recognition of pension commitments by means of a provision have a negative impact on ROI, the amortisation period of between 5 and 10 years, which is significant at 5%, that of more than 10 years, which is also significant but at 1%, the off-balance sheet pension commitment, which is not significant, and finally the pension commitment in another form, which is also not significant, improve ROI by 0.998515, 0.9995366, 0.021347 and 0.0262809 respectively. While FIFO has a negative effect on ROI, LIFO, which is insignificant, improves ROI by 0.2832729 and CMP reduces ROI by 0.032269, although it is still significant. The historical cost method has a negative effect on ROI and the fair value method increases ROI by 0.116205 and is significant at 5%.

4.2.3. The operating profit

The model is globally significant at 5% $\chi^2 = 0.0126$ and the classification is also good at 88.57%. The ROC curve is good, at 0.8898, which is good for forecasting. Companies using the straight-line depreciation system have a negative impact on operating profit, and declining balance depreciation reduces operating profit by 0.690025 but is still significant at 5%. Depreciation periods of less than 5 years have a negative impact on operating profit, while periods of between 5 and 10 years, which are significant at 10%, and periods of more than 10 years, which are not significant, improve operating profit by 0.34369 and 0.35235 respectively. The retirement commitment by way of provision has a negative impact on operating profit, while the off-balance sheet commitment, although not significant, tends to increase operating profit by 0.2887046. The retirement commitment in another form reduces operating profit by 0.6674075 despite being significant at 1%. Like LIFO, CMP reduces operating profit by 0.1145303 and 0.2906331 respectively, and FIFO has a negative impact on operating profit. The historical cost method has a negative impact on operating profit, while fair value, in addition to being significant, improves this result by 0.4211841.

These results show that accounting choices have a positive impact on financial performance and support hypothesis H1.

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4.3. The impact of accounting choices on the social factor

The model is globally significant at 10% ($\chi^2 = 0.0988$) and the classification is good at 81.82%. The ROC curve has a value of 0.8346 and is good for forecasting.

Companies using straight-line depreciation and those with depreciation periods of less than 5 years fail to achieve their social objectives. Companies that use a degressive and significant depreciation system of 5%, a depreciation period of between 5 and 10 years that is not significant and a depreciation period of more than 10 years that is also not significant reduce the achievement of their social objectives to 0.441351, 0.1224834 and 0.3876397 respectively. Companies with off-balance sheet and other pension commitments achieve their social objectives by 0.2108182 and 0.286616 respectively. Although companies using the LIFO method are significant at 5% and companies using the CMP method are significant at 10%, they reduce the achievement of their social objectives by 0.4821081 and 0.4101961, while companies using the FIFO method do not achieve their social objectives. This previous result is similar for companies that use fair value but are not significant, while those that opt for historical cost do not achieve their social objectives.

This result shows that accounting choices partially influence social performance. This bias is due to the fact that we used a single social performance indicator. Ce résultat conforte l'hypothèse H₃.

This result supports hypothesis H₃. In sum, these results are similar to those obtained by Ngongang (2005), who indicates that accounting practices determine the use of information and performance.

Table 2: accounting system and depreciation system

	Accounting system		Depreciation system	
	Marginal effect	Standard deviation	Marginal effect	Standard deviation
staff number				
- between 6 and 20 employees	0.0644876	0.020315	0.1746459	0.26691
- between 21 to 100 employees	0.3350522	0.2852	0.51853***	0.18981
Turnover				
- between 15 000 000 and 250 000 000	-0.075037 8	0.23514	-0.4026025	0.25413
-between 250 000 000 and 3 000 000 000	0.0870682	0.28502	-0.314167	0.30534
Sector of activity				
industrial sector	0.0242806	0.24029	-0.300847 5*	0.05624
- service provision sector	-0.126770 2	0.2316	-0.060806 2	0.28661
- other sectors	-0.31209166	0.27561	-0.0779591	0.47859
Debt requirements	0.1147921	0.1947	0.0603018	0.16658
Investment opportunities				
- scarcely	-0.509658 6***	0.13672	-0.0605186	0.23625
- averagely	-0.081798 5	0.23363	-0.2176382	0.26445
- regularly	0.440848**	0.21638	-0.1594545	0.26183

4.4. The impact of accounting choices on the organisational factor

The aim here is to show whether structural contingency factors (company size and sectors of activity) influence accounting choices (depreciation system).

With regard to the depreciation system, the model is globally significant at 10% ($\chi^2 = 0.0957$) and has a good classification equal to 76.00%. The ROC curve has a value equal to 0.7775 and is good for forecasts.

The number of employees ranging from 6 to 21 and then from 21 to 100 has a positive influence on the depreciation system or accounting choice, although the first interval is significant and the second insignificant.

Table 2 shows that there is a significant and positive relationship at the 1% level between the number of employees between 21 and 100 and the depreciation system. In other words, there is a positive relationship between company size and accounting choice. This result corroborates those of Watts and Zimmerman (1978), Zmijewski and Hagerman (1981) and Daley and Vigeland (1983) who concluded that the size of the company has a significant influence on the choice of accounting policy; it also corroborates those of Saada who found that the size of the company seems to be the main determinant of the choice of accounting methods and principally the depreciation policy.

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Similarly, in the same table, we observe that there is a significant relationship at 10% between the industrial sector and the depreciation system. In other words, there is a relationship between the choice of accounting methods and the sector of activity. This result corroborates the work of Ridha Shabou and Boulila Taktak (2002) who found that the sector of activity has a significant influence on the choice of creative accounting techniques and that of Ngongang (2010) who found that the sector of activity determines the choice of the full cost method.

CONCLUSION

Our study followed the quantitative method based on hypothetico-deductive analysis. An exploratory analysis enabled us to collect data through a questionnaire that was administered to SMEs in Cameroon. We opted for the non-probabilistic method, since we did not have a list of all the SMEs in different sectors of activity and/or all sectors of activity combined. Having selected companies on the basis of the opportunities available to us, we opted for convenience sampling. Our data are also from primary sources. Binary logistic regression is the analysis method we used and our data was processed using STATA version 12.0 software. The results obtained from our sample of 52 SMEs show that most SMEs in Cameroon modify their accounting choices and that the sector of activity and the size of the company influence accounting choices. These results also allowed us to observe that accounting choices influence the financial, economic and social performance of SMEs, which enabled us to validate our various hypotheses.

This study suffers from a number of limitations. Firstly, we were only interested in a few accounting choice and performance variables, despite their large number. Secondly, the sample size is very small. The final limitation is the categorical refusal of access to certain companies and to information about them. We also experienced a lack of time on the part of some managers to answer our questions, as well as the loss of some questionnaires submitted. The first recommendation here is to deepen management knowledge by training more or by recruiting an efficient accountant and/or management controller to help them choose the accounting methods they use within their company. The second recommendation is that SME managers should decentralise management and take certain decisions. Putting these decisions into practice will help to improve performance, if not better performance.

REFERENCES

- 1) Barbu (2006), " les entreprises françaises cotées face à l'harmonisation comptable internationale : une analyse néo-intentionnelle d'un long processus vers l'homogénéité ", Thèse de doctorat en sciences de gestion, Université d'Orléans. France.
- 2) Bimeme B I (2023) " Contrôle de gestion et pérennité des institutions de microfinance en Afrique subsaharienne ". *Revue Management et Innovation* N° 7, pp 140 – 165
- 3) Bimeme B I (2020) " Le rôle de la bonne gouvernance d'entreprise dans la communication des informations comptables et financières : une nécessité au Cameroun " *Revue africaine de management vol.5 (1) pp.17-34*
- 4) Bimeme. B.I & Ongono A. T. N. (2021) " Corporate Social Responsibility for Banks in Cameroon: Which Governance Model?". *Asia-Pacific Journal of Management Research and Innovation*. Volume 17 Issue 3-4, September–December 2021. Publié en Novembre 2022 ISSN: 2321-072/ ISSN: 2319-510X/ Springer
- 5) Bonnet F. (1995), *Pieges (et délices) de la comptabilité (créative) ?* Economica, Paris.
- 6) Casta F. & Ramond O. (2009), *Théorie positive de la comptabilité*. In *Encyclopédie de comptabilité, de contrôle de gestion et audit* (Eds, Colasse, B.). Paris : Economica, 1151-1165.
- 7) Colasse B. (2000), " Théorie comptable ", *Encyclopédie en comptabilité, contrôle de gestion et audit*, Economica paris.
- 8) Covalsky & Dirsmith (1988), " An Institutional Perspective on the rise, Social Transformation and the fall of a University Budget Category ", *Administrative Science Quarterly*, 33 pp. 562-587.
- 9) Demaria S (2008), " les choix options comptables lors de la première application des normes IAS/IFRS : Observation et compréhension des choix effectués par les groupes français ", Thèse de doctorat en sciences de gestion, Université de Nice-Sophia Antipolis, France.
- 10) Dimaggio P. & Powell W. (1983): " The iron cage revisited: institutional isomorphism and collective rationality in organizational fields ", *American sociological review*, Vol. 48, n°2.
- 11) Fields D., Lys Z. & Vincent L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics* 31 (1/3): pp. 255-307.
- 12) Forgyat T.J. (1992), *Financial Accounting Standard Setting as an Institutionalized Action Field : Constraints, Opportunities and Dilemmas* ", *Journal of Accounting and Public Policy*, 11, pp. 331-335.

The Determinants of Accounting Choices within the SMEs in Cameroon

- 13) Gbongue F., Planchet F., Abderrahim O. (2005), état des lieux des systems de retraite en Afrique Subsaharienne francophone, Revue subsaharienne d'économie et de finance.
- 14) Griffiths I. (1986), Creative Accounting, Unwin Paperbacks, London.
- 15) Hjelstrom A., Schuster W. (2008) "Standards, management incentives and accounting practice-lessons from the IFRS transition in Sweden", 31st congress of the European Accounting Association, Rotterdam.
- 16) Jameson N. (1988), A Practical Guide to Creative Accounting, Kogan Page, London.
- 17) Kanter R. M, (1972), " Commitment and community: Communes and utopias in sociological perspective ", Cambridge, Havard University Press.
- 18) Moumeni . Y (2023) : Examng the manipulation of accounting and financial information : The case of Cameroun Cameroun companies. Eximia Journal , Vol . 11, pp. 129-142
- 19) Ndong Ntah M. (2004): " informatisation et performance dans la PME au Cameroun. " Revue international P.M.E, 17(2), pp. 65-92.
- 20) Sadi Nacer-Eddine, (2011), " Innovations Comptables internationales et analyses des états financiers ", press universitaire Grenoble, France.
- 21) Smith W. & Watts L. (1992), " The investment opportunity set and corporate financing, dividend, and compensation policies ", Journal of Financial Economics, Vol. 32.
- 22) Stolowy H. & Breton G. (2004), " Accounts Manipulation: A literature Review and Proposed Conceptual Framework ", Review and Accounting and Finance, Vol 3, N°1.
- 23) Touron P. (2004), " l'adoption des principes comptables généralement reconnus aux Etats –Unis par Saint-gobain-Pont-à-Mousson : du conflit d'agence à la légitimité institutionnelle ", Comptabilité-Contrôle-Audit, Vol. 3, Tome 10.
- 24) Vidal O. (2011), " De l'importance des seuils en comptabilité. Comptabilités, économie et société ", Montpellier, France.
- 25) Watts R. & Zimmerman J. (1978): towards a positive theory of the determination of accounting standards, Accounting Review, Janvier, pp. 112-134
- 26) Watts R. & Zimmerman J. (1986): Positive Accounting Theory, Prentice Hall, 388 pages.
- 27) Watts R. & Zimmerman J. (1990). " positive accounting theory : a Ten year perspective ", Accounting Review, janvier, pp. 131-156.



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Efforts to Improve the Learning Outcomes of Pencak Silat Front Straight Kicks through A Scientific Approach and Learning Variations In Integrated Grade VIII Students of SMP Muhammadiyah 01 for the 2019/2020 Academic Year



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ABSTRACT: This study aims to improve the learning outcomes of pencak silat front straight kicks through a scientific approach and learning variations in integrated grade VIII students of SMP Muhammadiyah 01 for the 2019/2020 academic year. This study used the PTK (Classroom Action Research) approach. The subjects of this study were grade VII students of Integrated SMP Muhammadiyah 01 Academic Year 2019/2020 with a total of 22 students. The object of this study is through the application of "Scientific Approach and Learning Variations to Improve Learning Outcomes of Pencak Silat Front Straight Kick". This research time was carried out in the Even Semester at SMP Muhammadiyah 01 Medan at 08.00 WIB. The research instrument used in this study was an observation sheet of the pencak silat straight front kick learning result test based on the physical education curriculum of SMP Muhammadiyah 01 class VIII Integrated. Data analysis consists of data reduction and data exposure.

KEYWORDS : Straight Forward Kick, Scientific Approach And Learning Variety, Classroom Action Research

I. INTRODUCTION

Education is a systematic process or effort in providing knowledge, skills, values, and norms to individuals so that they can develop optimally. Education has an important role in shaping society and developing human potential (Lengkana & Sofa, 2017). The success of student learning does not only depend on students but also the role of teachers and facilities and infrastructure in schools. Teachers are required to condition the class and choose the right learning method so that the learning process for students can increase, while adequate facilities and infrastructure in the process of teaching and learning activities are also supporting student success so that it is a factor that cannot be ruled out in teaching and learning activities (Lestari, 2018).

The hope that never goes away from a teacher is how to make the learning materials delivered can be accepted by students and obtain good learning results (Sutardi & Sugiharsono, 2016). Physical education providers in schools have been oriented to a central point for teachers (Jatmika et al., 2017). This fact can be seen in the field through observations made by the author that teachers who have full power in the teaching and learning process do not consider aspects of student psychomotor development. So that the method taught does not work well. In the implementation of teaching and learning activities in schools, in general, teachers of physical education subjects tend to use a command style.

Command teaching style, or also known as authoritarian approach, is one of the teaching styles in which the teacher is in full control of the learning process and takes a dominant role in directing and controlling classroom activities (Gani & Kusnaldi, 2020). Usually this style begins with an explanation of the standard technique, and then students imitate and do it repeatedly (Syroj et al., 2017).

Along with that, a question arises whether there are no other teaching styles and learning approaches that can be used and applied in the implementation of physical education other than being more inclined to the command style. As a teacher, of course, you must try to find a way out so that the teaching and learning process is more innovative and efficient (Haris, 2020). As a prospective educator, the author feels that he is researching to find a harmonious approach in changing the learning process that is better used in learning students' movement skills.

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Teaching and learning activities have goals, goals are guidelines that provide direction where teaching and learning activities will be taken (Retnowati et al., 2016). The implementation of learning activities still tends to be carried out using a technical approach in a sport (Aditya & Nugroho, 2019). The application of a technical approach will make it difficult for students to understand the meaning of games in a sport, the impact is that students are less interested in the learning process so that learning objectives are not achieved (Mashud, 2017).

In general, physical education involves physical activity in the learning process and really requires an appropriate teaching style (Pahliwandari, 2016). This is a very important process for physical education teachers in improving the learning process through a scientific approach. It is hoped that by choosing the right teaching style, at the time of teaching will be able to improve learning outcomes. In choosing a teaching style, teachers must consider the advantages and disadvantages in the disadvantages of a teaching style (Bangun & Fitriyani, 2018). Usually teachers can feel comfortable with a teaching style they use, but it can cause an obstacle because of the lack of proper application of that style. Many teaching styles can be used in the physical education learning process in schools, one of which is the scientific teaching style (Sumantri et al., 2016).

The scientific approach is intended to provide understanding to students in knowing, understanding various materials using a scientific approach, that information can come from anywhere, anytime, not depending on unidirectional information from the teacher. Therefore, the expected learning conditions can be created to encourage learners to find out from various sources through observation, and not just being told. The scientific approach used in teaching and learning activities is considered to be able to produce an effective and efficient teaching and learning activity because the scientific learning approach is believed to be the golden bridge for the development and development of attitudes, skills and knowledge of students (Budiyanto et al., 2016).

Based on the results of observations made by the author at the Muhammadiyah 01 Medan Integrated Junior High School from June to July 2019, many students had difficulty in performing the pencak silat front straight kick technique, and based on information obtained from physical education teachers from 22 students only 8 or (36.36%) were completed. While 14 or (63.64%) students were declared incomplete. That is because basic movement skills are not good, how low students' understanding of basic straight-forward kick techniques is less systematic learning, such as direct teacher introduction to basic techniques, lack of variety of learning used by teachers, the teaching method used is the command teaching method, where this teaching method is a teacher who is more active in the learning process.

Judging from the implementation of pencak silat learning at SMP Muhammadiyah 01 Medan, it is carried out conventionally. From conventional learning shows a lack of variation in teaching styles given by teachers to students. In addition, students feel bored following the lesson because it does not involve students interacting in teaching and learning process activities but is fully mastered by the teacher. According to researchers, physical education teachers need to pay attention or respond to these symptoms and not take this for granted. If this is allowed to drag on, it is feared that it will reduce physical education learning achievement. To overcome this, it would be nice if physical education teachers use a learning approach that can arouse students' curiosity.

II. METHODS

This study uses the PTK (Classroom Action Research) approach, the research conducted intends to find information about the implementation of scientific learning approaches and variations of learning delivered with classroom action treatment (Dosinaen et al., 2020). This research approach is Classroom Action Research, where action delivery can be carried out one or more cycles, depending on the success indicators set in this study have been met. The study is terminated if the success indicators in this study have been achieved.



Figure 1 Classroom Action Research Schema

(Source: Arikunto, et al, 2012: 16)

The subjects of this study were grade VII students of Integrated SMP Muhammadiyah 01 Academic Year 2019/2020 with a total of 22 students. The object of this study is through the application of "Scientific Approach and Learning Variations to Improve Learning Outcomes of Pencak Silat Front Straight Kick". The location of this research is at SMP Muhammadiyah 01 Medan Jl.

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Demak No. 3 Sei Rengas Permata, Medan Area, Medan City, North Sumatra Academic Year 2019/2020. This research time was carried out in the Even Semester at SMP Muhammadiyah 01 Medan at 08.00 WIB. The research instrument used in this study was an observation sheet of the pencak silat straight front kick learning result test based on the physical education curriculum of SMP Muhammadiyah 01 class VIII Integrated. Data analysis carried out consists of data reduction and data exposure.

III. DISCUSSION

The table of observations in the initial data from the explanation of the physical education teacher is as follows:

Table 1. Completeness of Learning Outcomes in Initial Data

NO	KKM	Information	Number of Students	Percentage
1	0 KKM < 75	Unfinished	15	63%
2	75 KKM 100	Complete	8	36%

From the results of the initial data obtained by the researcher from the physical education teacher, the researcher continues the research and corrects errors during the learning process and looks for solutions to problems that occur in the initial data. The description of the data obtained by students can be seen in the table below:

Table 2. Description of learning outcomes data Straight Kick Front

NO	Learning Outcomes	Initial Attitude	Implementation Attitude	Final Attitude	Sum	
1	Cycle I	Sum	85	65	78	1892
		Average	3,40	2,60	3,12	75,6
2	Cycle II	Sum	90	72	82	2024
		Average	3,60	2,88	3,28	80,9

Table 3 Learning Outcomes of Pencak Silat Front Straight Kick Cycle I

NO	KKM	INFORMATION	Number of Students	Percentage
1	0 KKM < 75	Unfinished	4	28%
2	75 KKM 100	Complete	18	72%

Based on the first cycle table above, it can be seen that student learning outcomes in learning Pencak Silat Front Straight Kicks using a Scientific Approach and Learning Variations have not been completed classically. Of the 22 students who were the subjects of this study, it turned out that only 18 students had learning completeness, namely (72%), while the remaining 4 students did not have learning completeness, namely (28%). The grade point average obtained only reached (75.6) and this is still far from what was expected.

From the observations made by researchers during Cycle I learning, it can be seen that the learning process using the teaching style of the Scientific Approach is very helpful for teacher activities in delivering Pencak Silat Straight Kick material and students more often try movements than just staying still to wait their turn. The results of observations of teacher activities are as follows:

Table 4. Data from Teacher Observations During the Learning Process of Pencak Silat Straight Kick Front through Scientific Approaches and Learning Variations

NO	Assessed Aspects	Cycle I Teacher Activities
1	Appearance	4
2	Open a lesson	3
3	Classroom management	2
4	Presentation of material	1
5	The process of interaction with students	3
6	Utilization of the play approach method	3

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7	Utilization of learning media	4
8	Providing feedback	3
9	Timing	3
10	Close a lesson	2
Number of Scores obtained		28
Maximum Number of Scores		40
Average		70%
Percentage		Enough

This observation activity is carried out with observation sheets that have been provided by researchers. From the observations made by researchers, the following data results were obtained:

Table 5. Data on student observations during the learning process through a scientific approach and learning variations in the front straight kick of Pencak Silat cycle I

NO	Assessed Aspects	Criteria for first cycle students
1	Understanding of the material presented	2
2	Skills that learning carries out	3
3	Activeness in the learning process	2
4	Questioning ability	4
5	Independence	3
Number of scores Obtained		14
Max Score		20
Percentage (%)		70%
Information		Enough

After the learning process is complete, the Cycle II test action will be carried out to determine the results of student learning on the pencak silat material Front Straight Kick with KKM that has been determined by the school, which is 75. this process is carried out by trying 5x Front Straight Kick for one student. So the data on the results of learning Straight Front Kicks are obtained as follows:

Table 6. Learning Outcomes Data of Pencak Silat Front Straight Kick Cycle II

NO	KKM	Information	Number of students	Percentage
1	0 KKM <75	Unfinished	3	12%
2	75 KKM 100	Complete	19	88%

From the results of the data analysis above, it was found that student learning outcomes in learning Straight Kick Front through a Scientific Approach and Learning Variations have reached classical completeness. From the table above, it can be seen that students who completed the second cycle learning process increased to 88% while 12% did not complete this was as expected. From the observations made by researchers during Cycle II learning, it can be seen that the learning process using the inclusion style has increased and is much better than before, the results of observations of teacher activities are as follows:

Table 7. Data from Teacher Observations During the Learning Process of Pencak Silat Front Straight Kick through a Scientific Approach and Variations in Cycle II Learning

NO	Assessed Aspects	Cycle II Teacher Activities
1	Appearance	4

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2	Open a lesson	4
3	Classroom management	3
4	Presentation of material	3
5	The process of interaction with students	3
6	Utilization of the play approach method	4
7	Utilization of learning media	4
8	Providing feedback	4
9	Timing	4
10	Close a lesson	3
Number of Scores obtained		36
Maximum Number of Scores		40
Average		90%
Percentage		Excellent

This observation activity is carried out with observation sheets that have been provided by researchers, starting from the beginning of the learning process to the end of the learning process. From the observations made by researchers, the following data results were obtained:

Table 8. Data from Student Observations during the Learning Process through a Scientific Approach and Learning Variations in the Front Straight Kick of Pencak Silat Cycle II

NO	Assessed aspects	Criteria for II cycle students
1	Understanding of the material presented	4
2	Ability to carry out learning	4
3	Activeness in the learning process	3
4	Learning ability	4
5	Independence	4
Number of scores obtained		19
Max Score		20
Percentage (%)		95 %
Information		Excellent

It can be seen in the learning activities of Cycle II, there are some students who have not completed the learning process. For this reason, there are improvements in learning outcomes, there are several ways that can be done, these learning steps are implemented as a goal of improving learning outcomes, such as learning difficulties in students and forms of improvement in student learning outcomes.

From the data analysis that has been done, it can be concluded that by using a scientific approach and a variety of learning, students experience improvements in their learning outcomes on the front straight kick material and show significant results. From the results of the analysis, it can also be seen that the learning process of students from the initial data is still low. This is because students do not understand and do not understand how to do the front straight kick technique correctly, and some students who have completed have understood how to do the front straight kick technique correctly, and some students who have completed have understood how to do the front straight kick technique correctly. When students practice and compete, many single attacks are launched by students and many kicks do not meet their targets, the factors that influence the process of student attack practice are less varied causing students to feel bored and bored, which has an impact on mastering student attack techniques poorly and other factors that cause student attacks to be less satisfactory because there is no media to support the student practice process (Anas & Adi, 2018).

From data analysis, it is also known that from the results of student learning from the first learning test using a scientific approach and learning variations, there has been an improvement because there has been a complete increase in students even

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though they have not reached classical scores in the front straight kick process, and some students are still confused and do not understand how to do the front straight kick technique, especially the focus and body balance. Then it is necessary to make improvements to actions in cycle II. Straight kicks are often used to earn points when facing each other. To make a good straight kick, it is necessary to have elements of physical condition needed in carrying out these movements to support the implementation of movements properly and correctly (Gustama et al., 2021). Factors that result in less than optimal mastery of straight kick skills, starting from within the fighter to factors from outside the fighter (Barikah et al., 2020). The right exercise program can achieve the desired goals to the maximum (Syamsuramel et al., 2019). In cycle I teachers find difficulties experienced by students in learning. There are 4 students who do not understand the technique of straight front kicks, so cycle II teachers understand repetition or repetition in the learning process at every calm, and add insight in each teaching kick, especially in the room and on body balance.

In learning in cycle II, it can be seen that there has been an improvement in student learning activities from the previous cycle with a significant process. Improvements have occurred in learning by applying scientific approaches and variations of learning designed in cycle II which refer to reflection on cycle I experiences. Repeated exercises make the learning process fun and not monotonous and make students learn optimally to get optimal results (Amroin & Indahwati, 2021).

Students who have not completed the second cycle because they still do not understand and there are still those who are not serious. Improvement occurs because the teacher gives directions so that students can do T kicks according to what is given by the teacher. Teachers and researchers evaluate students' mistakes in making straight front kicks and give direction to students. The suitability of the initial attitude phase (tide stance), when the tide is carried out facing the target, the direction of the body faces sideways and is accompanied by the position of the horses that bend slightly or commonly called light horses (Pratama & Candra, 2021).

Based on the results of the above research, the contribution of scientific approaches and learning variations to improve the learning outcomes of front straight kicks students understand more and easier to do front straight kick techniques properly and correctly with a scientific approach and variations of learning applied by teachers students can carry out the level of tasks that have been provided with the abilities of their respective students. Thus, learning using scientific approaches and learning variations in pencak silat learning can improve the learning outcomes of straight front kicks in grade VIII Integrated students of SMP Muhammadiyah 01 Medan for the 2019/2020 academic year. For more details, the average score of students can be seen in the picture below:

Table 9. Comparison of Learning Outcomes of Straight Forward Kick Initial Data, Cycle I and Cycle II

Test Results	Complete	Completeness Classical	Not Complete	Completeness Classical	Value Average
Initial Data	8	36%	15	63%	65.4%
Cycle I	15	68%	7	32%	
Cycle II	19	88%	3	12%	90,8%

From this process, it can be concluded that using a scientific approach and learning variations can improve the learning outcomes of straight front kicks in grade VIII Integrated students of SMP Muhammadiyah 01 Medan for the 2019/2020 academic year. These basic skill aspects become absolutely mastered by prospective fighters so that in the process of coaching to a higher level can be sustainable and the biomotor components needed in pencak silat are strength, speed, power, flexibility, agility and coordination. But this does not mean that other biomotor components are not needed in martial arts, such as balance and endurance (Yulianto, 2017).

In Pencak Silat the kick technique is as important as the punch technique, but the kick has greater power than the punch force. When kicking a good balance is prioritized, not only the weight rests on one leg but also caused by the shock of the back force at the time of impact (Sandika et al., 2021). Attacks with feet that enter the target, without being hindered by blocking, avoiding or evading the opponent will get a value of two (Yuda, 2020).

IV. CONCLUSIONS

From the results of research and discussion, the following conclusions can be drawn "Through a Scientific Approach and Learning Variations Can Improve Learning Outcomes of Pencak Silat Front Straight Kick in Grade VIII Students of SMP Muhammadiyah 01 Medan Academic Year 2019/2019".

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REFERENCES

- 1) Aditya, R., & Nugroho, A. (2019). Peningkatan hasil belajar menggiring bola pada permainan sepakbola melalui pendekatan bermain pada siswa sekolah dasar. *Jurnal Ilmiah STOK Bina Guna Medan*, 7(2), Article 2. <https://doi.org/10.55081/jsbg.v7i2.285>
- 2) Aditya, R., & Nugroho, A. (2019). Peningkatan hasil belajar menggiring bola pada permainan sepakbola melalui pendekatan bermain pada siswa sekolah dasar. *Jurnal Ilmiah STOK Bina Guna Medan*, 7(2), Article 2. <https://doi.org/10.55081/jsbg.v7i2.285>
- 3) Amroin, Y. S., & Indahwati, N. (2021). Peningkatan keterampilan tendangan dalam pencak silat melalui variasi gerak dasar tendangan "T" dan tendangan depan pada siswa kelas v sdn pinggir papas 1. *Jurnal Ilmiah Mandala Education*, 7(3), Article 3. <https://doi.org/10.58258/jime.v7i3.2091>
- 4) Anas, M. K., & Adi, S. (2018). Pengembangan kombinasi tendangan a, t, c berbasis aplikasi android pada siswa PSHT. *Indonesia Performance Journal*, 2(2), Article 2. <https://doi.org/10.17977/um077v2i22018p92-98>
- 5) Arikunto, S, Sukardjono, P Supardi. (2012). Penelitian Tindakan Kelas. Jakarta: Bumi Aksara.
- 6) Bangun, S. Y., & Fitriyani, S. (2018). Peningkatan hasil belajar guling belakang senam lantai melalui gaya mengajar latihan pada pelajar sma. *Journal Physical Education, Health and Recreation*, 3(1), Article 1. <https://doi.org/10.24114/pjkr.v3i1.11510>
- 7) Barikah, A., Pratiwi, E., & Asri, N. (2020). Pengaruh metode latihan dan kemampuan gerak (motor ability) terhadap keterampilan tendangan lurus pencak silat. *Journal of SPORT (Sport, Physical Education, Organization, Recreation, and Training)*, 4(1), Article 1. <https://doi.org/10.37058/sport.v4i1.1693>
- 8) Budiyanto, M. A. K., Waluyo, L., & Mokhtar, A. (2016). Implementasi pendekatan saintifik dalam pembelajaran di pendidikan dasar di malang. *Proceeding Biology Education Conference: Biology, Science, Enviromental, and Learning*, 13(1), Article 1.
- 9) Dosinaen, M. A., Simanjuntak, V. G., & Hidasari, F. P. (2020). Meningkatkan hasil belajar menggiring dalam sepak bolamelalui cooperative learning type TGT. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa (JPPK)*, 9(6), Article 6. <https://doi.org/10.26418/jppk.v9i6.41012>
- 10) Gani, R. A., & Kusnaldi, E. (2020). Pembelajaran teknik passing bawah bola voli melalui pendekatan gaya mengajar komando. *Journal Power Of Sports*, 3(2), Article 2.
- 11) Gustama, K., Firlando, R., & Syafutra, W. (2021). Hubungan daya ledak otot tungkai dengan keterampilan tendangan lurus atlet pencak silat. *Gelanggang Olahraga: Jurnal Pendidikan Jasmani Dan Olahraga*, 5(1), Article 1. <https://doi.org/10.31539/jpio.v5i1.2860>
- 12) Haris, F. (2020). Pengaruh gaya mengajar terhadap keterampilan gerak dasar siswa sekolah dasar. *Sport Science*, 20(1), Article 1. <https://doi.org/10.24036/jss.v20i1.40>
- 13) Jatmika, H. M., Hariono, A., Purwanto, J., & Setiawan, C. (2017). Analisis kebutuhan guru pendidikan jasmani, olahraga dan kesehatan pasca program guru pembelajar. *Jurnal Pendidikan Jasmani Indonesia*, 13(1), 1–11. <https://doi.org/10.21831/jpji.v13i1.21021>
- 14) Lengkana, A. S., & Sofa, N. S. N. (2017). Kebijakan pendidikan jasmani dalam pendidikan. *Jurnal Olahraga*, 3(1), Article 1. <https://doi.org/10.37742/jo.v3i1.67>
- 15) Lestari, I. D. (2018). Peranan guru dalam penggunaan media pembelajaran berbasis information and communication technology (ICT) Di SDN RRI Cisalak. *SAP (Susunan Artikel Pendidikan)*, 3(2), Article 2. <https://doi.org/10.30998/sap.v3i2.3033>
- 16) Mashud, M. (2017). Pendekatan pembelajaran pendidikan jasmani olahraga dan kesehatan di era abad 21. *Multilateral : Jurnal Pendidikan Jasmani Dan Olahraga*, 14(2), Article 2. <https://doi.org/10.20527/multilateral.v14i2.2471>
- 17) Pahlwandari, R. (2016). Penerapan teori pembelajaran kognitif dalam pembelajaran pendidikan jasmani dan kesehatan. *Jurnal Pendidikan Olah Raga*, 5(2), Article 2. <https://doi.org/10.31571/jpo.v5i2.383>
- 18) Pratama, S. D. A., & Candra, A. R. D. (2021). Analisis gerak tendangan t pencak silat pada atlet perguruan tapak suci mijen semarang. *Unnes Journal of Sport Sciences*, 5(2), Article 2. <https://doi.org/10.15294/uoss.v5i2.49987>
- 19) Retnowati, D. R., Fatchan, A., & Astina, I. K. (2016). Prestasi akademik dan motivasi berprestasi mahasiswa s1 pendidikan geografi universitas negeri malang. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 1(3), Article 3. <https://doi.org/10.17977/jp.v1i3.6181>
- 20) Sandika, D., Alsaudi, A. T. B. D., & Hasani, I. (2021). Upaya meningkatkan keterampilan tendangan depan pencak silat dengan metode latihan plyometric. *Prosiding Seminar Nasional Pendidikan STKIP Kusuma Negara III*, 119–125.

Efforts to Improve the Learning Outcomes of Pencak Silat Front Straight Kicks through A Scientific Approach and Learning Variations In Integrated Grade VIII Students of SMP Muhammadiyah 01 for the 2019/2020 Academic Year

- 21) Sumantri, R. J., Sulaiman, S., & Nasuka, N. (2016). Pengaruh media gaya mengajar latihan dan tingkat motor educability terhadap hasil belajar pencak silat. *Journal of Physical Education and Sports*, 5(2), Article 2. <https://doi.org/10.15294/jpes.v5i2.13449>
- 22) Sutardi, S., & Sugiharsono, S. (2016). Pengaruh kompetensi guru, motivasi belajar, dan lingkungan keluarga terhadap hasil belajar mata pelajaran ekonomi. *Harmoni Sosial: Jurnal Pendidikan IPS*, 3(2), Article 2. <https://doi.org/10.21831/hsjpi.v3i2.8400>
- 23) Syamsuramel, S., Hartati, H., & Rahmadani, T. (2019). Pengaruh latihan interval lari 30 meter terhadap kemampuan frekuensi kecepatan tendangan lurus siswa ekstrakurikuler pencak silat di man 3 PALEMBANG. *Altius: Jurnal Ilmu Olahraga dan Kesehatan*, 8(1), Article 1. <https://doi.org/10.36706/altius.v8i1.8501>
- 24) Syiroj, A., Sunarno, A., & Dewi, R. (2017). Perbedaan gaya mengajar dan motor educability terhadap hasil belajar passing bawah bola voli pada siswa kelas XI MAN Rantauprapat. *Jurnal Pedagogik Olahraga*, 3(1), Article 1. <https://doi.org/10.22245/jpor.v3i1.8196>
- 25) Yuda, G. N. A. (2020). Peningkatan hasil belajar penjasorkes materi tendangan pencak silat melalui alat bantu tali bentang. *E- Jurnal Mitra Pendidikan*, 4(3), Article 3. <https://doi.org/10.52160/e-jmp.v4i3.676>
- 26) Yulianto, R. (2017). Penggunaan media pembelajaran alat bantu tali dan audio visual untuk meningkatkan teknik tendangan sabit pencak silat pada siswa kelas viii f mts negeri 1 Karanganyar. *Jurnal Ilmiah Spirit*, 17(2), Article 2. <https://doi.org/10.36728/jis.v17i2.841>.



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The Legal Force of Deed Statement of Meeting Resolutions Made Before a Notary Based on Private Minutes of the General Meeting of Shareholders (Case Study in Pt. Eco Environmental Energy Indonesia)



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ABSTRACT: This research is a normative legal research that examines the legal force of the deed of statement of meeting resolutions made before a notary based on a private minute of the general meeting of shareholders (a case study at PT Eco Environmental Energy Indonesia), the focus of this research is the legal force of the deed of statement of meeting resolutions made before a notary based on the minutes of the private general meeting of shareholders in the case study of PT. Eco Environmental Energy Indonesia. The focus of research is on the extraordinary general meeting shareholders held at PT. Eco Environmental Energy Indonesia as there were indications of unlawful acts that make the deed of statement of meeting resolutions (PKR) drawn up before a notary null and void. The study employs the evidentiary law theory, which utilizes the statutory, analytical, and case approaches. The analysis concluded that the deed of statement of meeting resolutions number 56 was null and void, due to flaws in the formal requirements specified in the Limited Liability Company Law in the holding of the EGMS on May 21, 2011, which violated laws and regulations, causing the deed of statement of meeting resolutions to lack valid material proof power as an authentic deed.

KEYWORDS: Deed of Statement of Meeting Resolutions, General Meeting of Shareholders, Limited Liability Company, Act Against The Law

I. INTRODUCTION

The Preamble of the 1945 Constitution of the Republic of Indonesia and Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia to realize a just and prosperous society, based on which everyone has the right to live in physical and spiritual prosperity and to obtain a good living environment, Indonesia needs national development on a broad scale, which means equal distribution of development both economically and legally, in order to achieve sustainable development that creates social justice and prosperity. One strategy to achieve this national development is to establish a Limited Liability Company, which is a business engaged in economic activities.

In order to create harmony in legal certainty in the economic sector, the government in its authority issues Company Law, which is greatly needed because, as the Indonesian economy progresses, more and more companies, both private and government, as well as foreign companies, are operating in Indonesia today. To cope with advancements and developments in this company's field, the law must constantly adapt to these developments, because a good and effective regulation is one that is constantly responsive to the changing dynamics of society.

A company in the form of a legal entity is a Limited Liability Company, commonly abbreviated as "PT," is a legal entity that is one of the foundations of national economic development and requires a strong legal foundation to generate legal certainty and justice in order to stimulate the state's economy.

The positive law that serves as the foundation for every company in Indonesia today is the Law of the Republic of Indonesia Number 40 of 2007 on Limited Liability Companies (hereinafter referred to as Company Law). In carrying out its business, a Limited Liability Company certainly has an organizational structure with respective roles and responsibilities, this is

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regulated in Article 1 paragraph (2) of the Company Law stipulating that the organs of the company consist of a general meeting of shareholders (hereinafter referred to as gms), directors, and commissioners. The GMS is an organ of the company that has authority that is not given to the board of directors or the board of commissioners, one of which is making decisions through meetings.

Holding a GMS is a legal act carried out by shareholders in a company for the benefit of the company, in this case amending, reducing or adding to the company's articles of association based on a GMS decision. According to Article 21 paragraph (4), GMS resolutions amending the company's articles of association must be published or specified in a notary deed in Indonesian.

Each GMS generates minutes of the GMS / minutes of meeting (hereinafter referred to as minutes) that include the GMS resolutions and are in compliance with the meeting agenda in the meeting invitation. In practise, there are two types of minutes. Private minutes are also often called the minutes of meetings made directly by the company after obtaining the approval of the GMS. The leader of the meeting/chairman of the meeting as the note taker must make and sign these minutes of meetings followed by the signature of at least 1 (one) shareholder appointed from and by the GMS participants. Following the signing of the deed, the chairman of the meeting submits it to the notary's office for approval by the Ministry of Law and Human Rights of Republic of Indonesia.

According to the above explanation, non-notarial documentation is referred to as "private minutes of meetings." On the other hand, when it is documented by the notary who is present at the meeting, it is commonly identified as "minutes of the general meeting of shareholders". Based on the minutes, those who are authorized by the GMS must appear before a notary to state what was discussed, happened, and decided by the GMS in a notarial deed. This type of deed is called "deed of statement of meeting resolutions (PKR). This type of notarial deed is not a "*relaas acte*," but a "*partij acte*," which is a deed drawn up before a notary (Rudy Prasetya, 2014: 62).

According to the explanation above, the deed of statement of meeting resolutions (PKR) falls under the category of deeds of parties/*partij deeds*, while deeds of minutes of meetings (BAR) falls under the category of official Deeds/*relaas deeds*. The legal evidential values of the two sets of deeds differ.

The authority of a notary to issue an authentic deed is based on the Law on the Position of a Notary. One of a Notary's authorities is outlined in Article 15 paragraph (1) Law Number 2 of 2014 on Amendments to Law Number 30 of 2004 on The Position of Notary (hereinafter referred to as the Notary Office Law) which states; "the notary has the authority to make authentic deeds regarding all actions, agreements, and stipulations that are required by laws and regulations and/or that are desired by interested parties, to guarantee the date of the deed is certain, to keep a record of it, and to provide grosse, copies, and quotes as needed, as long as the making of the deed is not also assigned or excluded to other officials or other people determined by law."

It can be inferred that a notary holds authority over all actions related to the deed, unless another official has been designated by statutory regulations to handle such assignments.

An authentic deed or a notarial deed holds strong evidential power, which is written proof that provides assurance, order, and legal protection as long as it is prepared in accordance with the form and procedure prescribed by law. An authentic deed is defined in Article 1868 of the Indonesian Civil Code (hereinafter referred to as the Civil Code) as one which has been drawn up in a legal format, by or before public officials who are authorized to do so at the location where this takes place.

This is in line with the opinion of a legal expert, R. Soergondo, who states that an authentic deed is drawn up and formalized in a legal form by or before a public authority who is authorized to do so, at the location where the deed is formed. (Soergondo, 1991: 8).

According to article 1870 Civil Code, an authentic deed shall provide conclusive evidence regarding the contents stipulated therein for the parties, their heirs or parties having rights therein. An authentic deed has three important aspects: formal strength, material strength, and outward strength. Together, these aspects provide conclusive proof of rights and obligations, ensuring legal certainty and preventing disputes.

When performing their duties, a notary must adhere to Indonesian laws and regulations and should not overlook them. The notary needs to proceed with caution when creating a deed to ensure it adheres to the appropriate rules and regulations. If not done correctly, the deed may be reduced to a private deed and be deemed invalid by law.

Problems can develop if there is dishonesty in the implementation of the GMS and the information given by the attendant. In practice, a private decree is established between interested parties, ensuring that it only affects those who consent to it. Often times, private minutes contain incorrect information that favors interested parties while harming parties who are

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not part of that interest, particularly notary.

An example is found in the case of Decision Number 82/Pdt.G/2013/PN.BTM jo. Decision Number 45/Pdt/2014/PTR jo. Decision Number 1738 K/Pdt/2015. The parties to the dispute include the following: PUNGKY BAMBANG PRIYAMBODO as the plaintiff/comparator/respondent for cassation who owns 250 shares or the equivalent of 25% of the shares that have been placed at PT. ECO ENVIRONMENTAL ENERGY INDONESIA as Defendant I / Appellant I / Petitioner for Cassation and SUDARSO as Defendant II / Appeal II.

The plaintiff contended that in the Extraordinary General Meeting of Shareholders (EGMS) held on 21 May 2011, which was later stated in the Deed of Statement of Meeting Resolutions (PKR) Number 56 dated 31 May 2011 (hereinafter referred to Deed Number 56), drawn up before a notary the defendant had committed an unlawful act, particularly against the Company Law, causing harm to the plaintiff. The complaint is based on the following facts: a) the meeting agenda does not correspond to the meeting agenda in the meeting invitation; b) the extraordinary GMS is held in violation of the law.

The Pekanbaru High Court panel of judges ruled that the defendants' attendance at the Extraordinary General Meeting of Shareholders on 21 May 2011, which was later stated in the Deed Number 56 dated 31 May 2011, was an unlawful act, rendering it invalid, non-binding, and null and void. In accordance with the decision rendered by the Pekanbaru High Court, which granted the appellant's exception in part, a request for cassation was subsequently filed by the Appellant under Decision Number 1738 K/Pdt/2015. However, the Supreme Court has reached a concurrence with the Pekanbaru High Court's position, thereby leading to the denial of the cassation request.

II. RESEARCH PROBLEM

The researcher has found that having a notary create a deed of statement of meeting resolution (PKR) does not ensure the legitimacy of an extraordinary GMS for a Limited Liability Company. In reality, the issuance of a deed of statement of meeting resolution authorizing the convening of an extraordinary GMS could result in legal implications for the limited liability company's shareholders in the form of losses. A notary in his capacity to issue a deed of statement of meeting resolution, which is a deed of the parties/*partij deed*, holds a low burden of evidence because the notary simply relies on the private minutes of the limited liability companies. Based on the description above, the researcher would like to investigate the legal force of the deed of statement of meeting resolutions made without the presence of a notary at the general meeting of shareholders in a limited liability company, as well as the legal certainty of the deed of statement of meeting resolutions, which contains an element of unlawful act. Hence, the problem question to be examined is what is the legal force of a deed of statement of meeting resolutions prepared before a notary based on the private minutes of the GMS that do not correspond to the meeting's agenda?

III. RESEARCH METHODS

Methods of research are tools to find out a problem to be studied, whether in social sciences, law, or any other subject. As a result, the purpose of a research will be determined by the object and type of study (Zainuddin, 2011: 21). The method of research employed in this study is a normative legal research method in which the law is conceptualized as what is stated in laws and regulations (law in books) or law is conceptualized as standards or norms that are deemed adequate benchmarks for human behaviour (Amirrudin, Asikin Zinal, 2012: 118). The normative legal research focuses on literature studies, which include legal materials such as legislation, legal theory, judicial decisions, doctrine, legal principles, legal theory, journals, and articles. The normative legal research examines written law from various perspectives, including theory, history, philosophy, comparison, structure and composition, scope and material, consistency, general explanation, and article by article, formality and binding force of law, as well as the legal language used, but does not examine applied or implementation aspects. As normative legal research does not examine applied or implementation aspects, it is often referred to as dogmatic or theoretical law research (Abdulkadir, 2004: 101). The research method was used to examine the decision Number 82/Pdt.G/2013/PN.BTM jo. Decision Number 45/Pdt/2014/PTR jo. Decision Number 1738 K/Pdt/2015 in which the Pekanbaru High Court's ruling partially upheld the appeal, including the nullification of the Deed number 56 from May 31 and the Supreme Court concurred with the Pekanbaru High Court's decision.

IV. RESULT AND DISCUSSION

A. Case Position

The plaintiff is a shareholder in PT. Eco Environmental Energy Indonesia (hereinafter referred to "PT. ECO") based on the

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Deed of Establishment of PT. ECO Number 200 dated 20 March 2008, which drawn up before Hatma Wigati Kartono, SH, notary in Batam, which later obtained legal entity approval from the Ministry of Law and Human Rights of the Republic of Indonesia in accordance with the Decree of the Minister of Law and Human Rights of the Republic of Indonesia Number: AHU-35495. AH.01.01. year 2008 dated 25 June 2008 ("Deed of Establishment"). The plaintiff is the owner of 250 (two hundred fifty) shares with a total share value of Rp.312.500.000,- (three hundred twelve million five hundred thousand rupiah) or in other words is the owner of 25% (twenty five percent) shares that have been placed and paid up at PT. ECO. The following are the main issues in this case, arranged by relevance in this study; Concerning the Meeting Agenda, it is not in accordance with the meeting agenda in the meeting invitation. The EGMS on May 21 2011 held by the defendants was basically in conflict with the provisions of the relevant regulations and laws, as shown by the disparity of the EGMS agenda from the agenda specified in the EGMS Invitation Letter, especially as follows:

The agenda of the EGMS Invitation Letter dated 02 May 2011 submitted by the Main Commissioner (in this case Defendant II) of PT. ECO, Sudarso, are as follows:

- (i). Changes in the management composition of the company;
- (ii). Purchase of shares;
- (iii). Company Development Report;
- (iv). Other things.

However, in the EGMS on May 21, 2011, the following decisions were made:

- (i). Increase in authorized capital from the initial capital of Rp. 5,000,000,000.- (five billion rupiahs) to be increased to Rp. 31.250.000.000.- (thirty-one billion two hundred and fifty million rupiah);
- (ii). Changes in share of ownership;
- (iii). Changes in the management composition of the Company (Directors and Commissioners).

Whereas, in the EGMS Invitation Letter dated 02 May 2011, additional meeting agenda items should not have been decided at the EGMS dated 21 May 2011, because the EGMS on 21 May 2011 was not attended by all shareholders and/or their representatives.

The legal fact is that the absence of all Shareholders can be identified in Deed Number 56, which indicated that the EGMS dated May 21 2011 was only attended by 750 (seven hundred and fifty) shares, which equaled 75% (seventy five percent) of all shares which have been submitted in the firm.

Regarding the absence of all shareholders, the plaintiff disputed the actions of defendant II who had refused the presence of the plaintiff's representative who had been given a Power of Attorney. During the EGMS held on May 21, 2011, Al Faisal, the attorney for the plaintiff who held 250 out of 1000 shares in PT. ECO, was rejected and removed by Defendant II when he attempted to attend the meeting.

B. The Juridical Meaning of the Deed of Statement of Meeting Resolutions (PKR) at the General Meeting of Shareholders

The rule of law consists of the events and effects to which the rule of law relates. Such events are referred to as legal events and the consequences arising from these events are legal consequences (Pipin Syarifin, Zarkasy Chumaidy, 1998: 72). Legal events can be classified or divided into two types, namely:

1. Legal events due to the actions of legal subjects (human actions) are actions committed by humans or legal entities that might result in legal consequences, such as purchasing, selling, and others.
2. Legal events that are not the actions of legal subjects (events that are not human actions) are all events that do not occur as a result of legal subjects' actions, but if they do occur, they can have legal implications, such as natural death.

Legal events that are activities performed by legal subjects are usually also called legal actions. As a result of this action, a legal event known as a legal action occurs. Legal action may take the following forms:

1. Unilateral legal action: An action made by only one party that creates, alters, or terminates a right, such as making a will, declining an inheritance, or recognizing a child.
2. Multilateral legal actions: are legal actions that require the cooperation of two or more parties in order to have legal consequences (Herlien Budiono, 2014: 13). For instance, agreement.

An agreement is an example of multilateral actions, nevertheless, there are several legal actions made by multiple people that cannot be defined as agreements, such as decisions reached at meetings. It can be inferred that holding a GMS is a multilateral legal action but is not included in the category of agreement but merely a commitment or an obligation. Commitment is a translation of the original Dutch phrase, *verbinten*. While the commitment is a legal relationship

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between two people or two or more parties, one party has the right to demand anything from the other party and the other party is bound to comply (Subekti, 2001: 1)

The organs of a limited liability company consist of the general meeting of shareholders, the board of directors, and the board of commissioners. Shareholders through the general meeting of shareholders, are company equipment which is the highest authority in the company and carries out the highest authority over the company. Regarding the holding of GMS, there are 2 (two) categories of GMS based on Article 78 of the Company Law, namely;

a. Annual GMS; b. Other GMS. Based on the article above, in practice, other GMS are known as extraordinary GMS. The term "extraordinary GMS" (hence referred to as EGMS) is not recognised in Company Law; instead, the term "other GMS" is used. An extraordinary GMS is only held at any time when necessary, in other words, another GMS is held if there is an extraordinary legal action within a company that changes the composition of the previous articles of association. According to Article 21 paragraph (4) of the Company Law, the amendments to the articles of association as referred to in paragraphs (2) and (3) must be contained or stated in a notarial deed in the Indonesian language. This means, the GMS amendment to the articles of association can be made either with a notary deed in the form of a *relaas* or a notary deed in the form of *partij*, namely the deed of statement of meeting resolutions (PKR).

C. Formulation of the results of the General Meeting of Shareholders in the Deed of Statement of Meeting Resolutions (PKR) Made Before A Notary

It is necessary to create minutes for every GMS, a GMS that fails to produce minutes is regarded as invalid and never existed. As a result, matters that are decided and determined at the GMS cannot be implemented.

It is mandatory for the minutes of the GMS to be included in a notarial deed written in Indonesian language, as per Article 21 paragraph (4) of the Company Law. This applies to any GMS that modifies the articles of association, whether it requires approval from the Minister or just notification to the Minister. The information must be stated in an Indonesian notary deed. The notary's deed contains or genuinely depicts an activity taken or a situation viewed or seen by a notary. A notary's authentic deed can be accounted for and protect the public when carrying out legal action.

The authentic deed's strength lies in its ability to serve as conclusive proof for all parties involved (Rahmida, 2020: 15).

The decisions made during a private GMS meetings, which are documented in minutes of the meeting, need to be included in a notarial deed, which is a deed drawn up before (*ten overstaan*) a notary or known as a party deed (*partij akten*). A party deed is a deed that contains a "description" of what happened as a result of another party's actions before a notary, meaning what was explained to the notary when performing his duty, and what the other party intentionally came before the notary for, as well as providing a statement before the Notary so that the statement or action is confirmed by the notary in an authentic deed so that the statement or action is confirmed by the Notary in an authentic deed. The deed of statement of meeting resolutions (PKR) takes the form of a notarial deed, but it is created based on privately made minutes of meeting.

D. Legal Force of the Deed of Statement Of Meeting Resolutions (PKR) When The Minutes Are Made Privately By The General Meeting of Shareholders (GMS)

A deed serves as evidence because it was created with the intention of providing future proof. There are three types of documentary evidence: authentic deeds, underhanded deeds, and letters. A notary deed is considered authentic evidence. A notary deed has the power of proof, as stated in Article 1867 of the Civil Code: "written evidence occurs in authentic or private documentation". Written evidence is a readable sign that conveys an idea, which can come in the form of a legal document or any other type of written material (Ali Afandi, 1997: 199).

The strength of evidence, in relation to the authority that exists in the authentic deed of the statement of meeting resolutions (PKR), includes:

1. Formal Strength

With this formal strength, it is clear that the deed of statement of meeting resolutions was made in accordance with the Notary Office Law. Notary and attendants guarantee the accuracy of the deed's date, signatures, and identities.

2. Outward Strength

An authentic deed that is made in accordance with specific conditions and subsequently fulfilled will have legal force from its inception. The deed of statement of meeting resolutions must comply with the conditions specified in the Company Law and the Notary Office Law.

3. Material Strength

The material strength of the deed of statement of meeting resolutions is based on its ability to provide conclusive evidence against

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all parties involved in the agreement. The legitimacy of the Deed is confirmed by the minutes of the GMS, which were created in accordance with the Company Law regulations and kept confidentially.

The deed of statement of meeting resolutions is a type of notary deed that possesses the same authenticity as other authentic deeds. It must contain the three essential elements of formal, material, and outward evidentiary strength to be considered as a deed that holds conclusive evidence and the deed is valid as long as the parties to the deed acknowledge the truth of the deed. If these matters are not fulfilled, the deed can lose its authenticity and become a private deed which can later be canceled or null and void by law. Even though the deed of statement of meeting resolutions has outward proof like an authentic deed, however, the possibility of losing the authenticity of a private deed is greater than an authentic deed. (G.H.S Lumban Tobing, 1980: 48).

In the case study of PT. ECO, PUNGKY BAMBANG PRIYAMBODO as the plaintiff at the Batam District Court with decision number 82/PDT.G/2013/PN.BTM argued that the decision from the EGMS on May 21, 2011 contained legal flaws. The panel of judges, however, believed that the defendants' activities in the EGMS dated May 21, 2011, as stated later in the Deed Number 56, were valid and in conformity with the articles of associations of PT ECO and the Company Law. According to the researcher, the Batam District Court's panel of judges was not thorough and meticulous in matching the meeting agenda provided in the meeting invitation on 2 May 2011 with the EGMS results on 21 May 2011. The panel of judges made a mistake in determining the problem because their main focus was related to the increase in the company's authorized capital from an initial capital of Rp.5,000,000,000.00 to Rp.31,250,000,000.00. The act of deciding on meeting material that was not included in the meeting agenda in the invitation letter dated May 2, 2011, violates Article 75 paragraph (4) of the Company Law, which requires resolution on the additional agenda shall be approved unanimously. However, based on the private minutes of the GMS, only 75% of the shares were presented and agreed, upon due to the power of attorney from the plaintiff, Al-Faisal, as the owner of 25% shares in PT. ECO has been evicted by Defendant II so that it violates the subjective rights of the plaintiff based on Article 85 of the Company Law paragraph (1) and has also violated Article 75 paragraph (4) of the Company Law. Thus, the decision making at the EGMS on 21 May 2011 was legally flawed. This is consistent with the decision of the Pekanbaru High Court Number 45/PDT/2014/PTR, which stated that the panel of judges at the High Court did not agree with the legal considerations of the Judge at the First-level Court because the First-level Judge had made a mistake in identifying the problem (main issue). As a result, the Pekanbaru High Court ruled that the defendants' actions at the EGMS on May 21, 2011, as stated in the Deed Number 56 dated May 31, 2011, drawn up before Hatma Wigati Kartono, SH, Notary in Batam, were unlawful. Thus, the EGMS dated May 21, 2011, which was then stated in the Deed Number 56 dated May 31, 2011, drawn up before Hatma Wigati Kartono, SH, Notary in Batam, as well as any shareholder meeting including amendments to the articles of association of PT. ECO, after May 21, 2011, regardless of the form it taken, is invalid, non-binding, and null and void.

On this basis, Defendant I/Appellant I, PT. ECO, together with Defendant II/Appellant II, Sudarso, filed a cassation request to the Supreme Court. However, with Decision Number 1738 K/Pdt/2015, the Supreme Court agreed with the Pekanbaru High Court which stated that it was proven that during the implementation of the EGMS, there had been changes and/or additions to the program or the program was not in accordance with what was written in the invitation. Based on the provisions of Article 75 paragraph (4) of the Company Law, resolution on the additional agenda shall be approved unanimously. Thus, the EGMS is invalid because it is not based on legal rights and its implementation is against the law, so based on the decision the cassation application is rejected.

The inadequacies in the formal parts of the EGMS implementation, which were later included in the private minutes of the GMS meeting, had caused the deed of statement of meeting resolutions to lack material evidential power as an authentic deed. The legal flaw in the deed of statement of meeting resolutions issued by Notary Hatma Wigati Kartono lies in the minutes of the EGMS on 21 May 2011 which was based on the implementation of the EGMS that was not in compliance with the law, resulting in an unlawful act.

V. CONCLUSION

The legal force of the deed of statement of meeting resolutions to become conclusive evidence was influenced by the holding of the EGMS dated May 21, 2011. Considering that the EGMS was not in accordance with the provisions of the laws and regulations, the legal actions taken after the EGMS were null and void. Due to flaws in the formal aspects of the EGMS, the deed of statement of meeting resolutions lacked material evidential power as an authentic deed. According to the above case study, the Deed Number 56 dated 31 May 2011, made before Hatma Wigati Kartono, SH, Notary in Batam, was declared

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null and void due to legal defects in the deed of statement of meeting resolutions issued by Hatma Wigati Kartono, Notary caused by the EGMS minutes on 21 May 2011 that were not in accordance with the law.

ACKNOWLEDGEMENT

I would like to express my gratitude to all lecturers of the Master of Notarial Law Postgraduate Program of Warmadewa University for their guidance, assistance, and direction in my research.

REFERENCES

- 1) Abdulkadir Muhammad, 1999, *Hukum Perusahaan Indonesia*, Bandung, Citra Aditya Bakti.
- 2) Ali Afandi, 1997, *Hukum Waris, Hukum Keluarga, Hukum Pembuktian*, Rineka Cipta, Jakarta.
- 3) Amiruddin & Zainal Asikin, 2012, *Pengantar Metode Penelitian Hukum*, Raja Grafindo Persada, Jakarta.
- 4) G.H.S Lumban Tobing, 1980, *Peraturan Jabatan Notaris*, Erlangga, Jakarta.
- 5) Herlien Budiono, 2014, *Ajaran Umum Hukum Perjanjian dan Penerapannya di Bidang Kenotariatan*, PT. Citra Aditya Bakti, Bandung.
- 6) Pipin Syarifin, Zarkasy Chumaidy, 1998, *Pengantar Ilmu Hukum*, Pustaka Setia, Jakarta.
- 7) R. Subekti, 1989, *Hukum Acara Perdata*, Bina Cipta, Bandung.
- 8) R. Soegondo, 1991, *Hukum Pembuktian*, PT. Pradnya Paramitha, Jakarta
- 9) Rahmida Erliyaniand Siti Rosyidah Hamdan, 2020, *Akta Notaris Dalam Pembuktian Perkara Perdata & Perkembangan CyberNotary*, Dialektika, Yogyakarta.
- 10) Rudy Prasetya, 2014, *Perseroan Terbatas Teori & Praktik*, Sinar Grafika, Jakarta
- 11) Zainuddin Ali, 2011, *Metode Penelitian Hukum*, Sinar Grafika, Jakarta.



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Evaluation of Sepak Takraw Extracurricular Activities at Elementary Schools in Purworejo Regency



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ABSTRACT: This study aims to analyze the results of context, input, process, and product (CIPP) evaluation of extracurricular activities at Elementary Schools in Purworejo Regency. This qualitative descriptive study uses a quantitative and qualitative approach (mixed method). The subjects of this study were principals, extracurricular coaches, and students at Elementary Schools in Purworejo, including one principal, one extracurricular coach, and several students from each Elementary School in Purworejo Regency who were willing to become samples and filled out questionnaires from researchers. The samples in this study were five school principals, five extracurricular coaches, and 50 students. Quantitative data were analyzed using percentage techniques, while qualitative data were presented through data presentation, reduction, and conclusion drawing. The results showed the evaluation of extracurricular activities in Elementary Schools in Purworejo Regency were in the category of poor. Furthermore, each aspect of the evaluation is explained; (1) Context evaluation was in good categories. The indicators of each aspect were as follows: extracurricular background had a result of 2.64 which means it was in the good category; extracurricular goals had a result of 2.39 which means it was in poor category; and extracurricular programs, with a result of 2.47 which means it was in poor category. Then, from those three indicators in context, it had a result of 2.50 meaning it was in good category. (2) Input evaluation was in poor category. The indicators of each aspect were as follows: student condition had a result of 2.47 which was in poor category, facilities had a result of 2.37 which was in poor category, the extracurricular coaches' competence had a result of 2.53 which was in good category. Then, from those three indicators, the result was 2.46 which was in poor category. (3) The evaluation process was in poor category. The indicators of each aspect are the implementation of extracurricular activities with a result of 2.29, which was in poor category, the evaluation of the extracurricular program of 2.40 which was in poor category, too. Then, from both of indicators, the result was 2.34 which was in poor category. (4) Product evaluation was in the poor category. The indicators of each aspect were results of extracurricular activities of 2.27 which was in poor category, so from this indicator, it could be concluded that in the process resulted in 2.27 which was in poor category.

KEYWORDS: Evaluation, Extracurricular, Sepak Takraw

I. INTRODUCTION

During the education at the school, in addition to receiving the type of education that is intracurricular, namely educational and teaching programs consisting of subjects that are in accordance with the content of the educational curriculum, the school also needs to organize extracurricular programs that can foster and develop the talents and interests of students optimally. Thus, students are expected to achieve maximum learning achievement to achieve educational goals (Nuryanto, 2017: 116). The education unit provides a forum for extracurricular activities to channel the talents, interests, hobbies, personalities, and creativity of students that can be used as a tool to detect the talents of students and design professionally so that it can be a way in creating talents, shaping characters, and as a place to student actualizations. It differs from the opinion (Tarbiyah et al., 2019), which states that the planning stage can be implemented and eliminated according to the evaluation of activities every month or every semester. About 30% of schools still need an organizational structure for managing extracurricular activities that can be proven. Extracurricular is an activity that is carried out outside the lesson timing as a forum for channeling the potential, interests, and talents of students in order to have mature skills and personalities, and preparing students to become superior, qualified, and competitive human beings in order to answer challenges in the future (Asmani, 2011). Extracurricular activities have been underestimated only as a complement to intracurricular activities (Asmani, 2011) whereas students are directed to have timeless and universal characteristics such as honesty, discipline, respect for pluralism, empathy, and sympathy in extracurricular (Faizin Karimi, 2011).

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Extracurricular activities are one of the programs run in schools. Extracurricular activities are activities that are carried out after teaching and learning activities. Students carry out positive activities through extracurricular activities so that after finishing the lessons or going home from school, they do not do something useless. The definition of extracurricular, according to the large Indonesian dictionary quoted by (Marlya, 2021), is: "an activity outside the program written in the curriculum such as leadership exercises and student coaching."

Extracurricular activities, in general, are activities that are used as a forum for students who have an interest in participating in these activities following the interests, talents, hobbies, personalities, and creativity of students that can be used as a tool to detect students' talents and are systematically designed so that they can create and foster the potentials of students and in the event of fostering students' character in a variety of activities (Arifudin, 2022: 830). However, many of the school graduates who have high grades, smart, brilliant, and able to solve the subject matter very quickly, but unfortunately, not a few of them do not have intelligent behavior and lack a good mental personality. At the same time, the purpose of education is to make human characters noble humans, human beings (Harefa, 2013, p. 200).

Based on the opinion of Marzuan (2018), the process of student progress can be shown through the evaluation value of activities by extracurricular coaches. It can be communicated to the principal to be consulted in subsequent activities to connect and follow organizational governance. The budgeting function of 80% of schools gets from the personal budget of supervisors and students' parents. In comparison, the function of preparing reports on 90% of extracurricular activities in schools is more dominant on the class meeting agenda. The purpose of this study can be underlined to determine the evaluation of sepak takraw extracurricular activities at elementary schools in Purworejo Regency. From the importance of extracurricular activities and the many slanted views about extracurricular activities above, the focus and sub-focus of research that researchers raise is the evaluation of extracurricular activities in elementary schools in Purworejo Regency. In extracurricular activities, there are several functions to these activities, namely: development function, social function, recreational function, and career preparation function (Noor, 2012). The term evaluation comes from English, which is linguistically interpreted as assessment (Sukiman, 2012).

Creating an open-minded student-athlete to communicate with others may result in a rapid learning process, as open-minded choices convey any attempt to cope with the student-athlete becoming involved in avoiding frustration (Mazerolle et al., 2016). It will be achieved through mentoring programs that offer capital, affirmations, education, and student-athlete empowerment (Bimper, 2017).

Program evaluation contains three important elements: systematic activities, data, and decision-making (Arini., et al., 2021: 32). Systematic activities mean that program evaluation is carried out through an orderly procedure based on scientific rules. Data collected as the focus of program evaluation is obtained through collection, processing, analysis, and presentation activities using scientific approaches, models, methods, and techniques. Decision-making means that the data presented will be valuable if it is used as valuable input for the decision-making process about the alternatives to be taken for the program (Sudjana, 2006).

II. MATERIALS AND METHOD

This research is a quantitative research with evaluation methods, including program evaluation, namely the evaluation of sepak takraw extracurricular activities. Sukmadinata (2017: 68) states that evaluative research is a research activity that evaluates an activity or program that aims to measure the success of an activity or program, and determine the success of a program and whether it is following expected criteria. This study uses the CIPP or Context, Input, Process, and Product models. According to Stufflebeam (1985) in Sugiyono (2013:579), the scope of complete program evaluation generally includes four levels: context, input, process, and product evaluation. According to Finney (2020:10), the CIPP model is a comprehensive framework to guide the formative and summative evaluation of projects, programs, personnel, products, institutions, and systems. This research was conducted in the Extracurricular Group at the Elementary School located in Purworejo Regency. This research was conducted in November to December 2022.

Table 1. Research Sample of Elementary Schools in Purworejo Regency

No	Name of School	Principal	Coach	Student
1	SD N Plaosan	1	1	10
2	SD N Kedung Kamal	1	1	10
3	SD N Sidorejo	1	1	10
4	SD N Brunosari	1	1	10
5	SD N Wonosuko	1	1	10
	Total	5	5	50

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Table 2. CIPP Instrument Grid

Variable	Indicators	Respondent	Instrument
Context	Extracurricular Background	Coaches, Principals	Questionnaire
	Extracurricular Objectives		
	Extracurricular Program		
Input	Student Condition	Coaches, Principals	Questionnaire
	Facilities & Infrastructure		
	Extracurricular Coach Competencies		
Process	Implementation of Extracurricular Activities	Coaches, Principals	Questionnaire
	Evaluation of the Extracurricular Program	Coach, Students	
Product	Results of Extracurricular Activities	Coaches, Students	Questionnaire

III. DISCUSSION

Based on the research results and the data analysis that has been carried out, it is concluded that the extracurricular evaluation of sepak takraw in elementary schools in Purworejo Regency results in poor category, and the following conclusions are obtained.

1. Based on the Context Evaluation of sepak takraw extracurricular in elementary schools in Purworejo Regency, the indicators of each aspect are extracurricular background, with a result of 2.64 in good category; extracurricular goals, with a result of 2.39 in poor category; extracurricular programs, with a result of 2.47 in poor category. Thus, based on those three aspects of the indicator in the context, the result show 2.50 which is in good category.
2. Based on the Input Evaluation of sepak takraw extracurricular in elementary schools in Purworejo Regency, the indicators of each aspect are student condition with a result of 2.47 in poor category, facilities with a result of 2.37 in poor category, and extracurricular coaches competence of 2.53 in good category. Thus, from the three aspects of the indicator in the input, the result is 2.46 in poor category.
3. Based on the Context Evaluation of sepak takraw extracurricular in elementary schools in Purworejo Regency, the indicators of each aspect are the implementation of extracurricular activities with a result of 2.29 in poor category, and the evaluation of the extracurricular program with a result of 2.40 in poor category. Thus, based on both aspects of the indicator in the context, the result is 2.34 in poor category.
4. Based on the Product Evaluation of sepak takraw extracurricular in elementary schools in Purworejo Regency, the indicator of aspect is the results of extracurricular activities with a result of 2.27 in poor category.

IV. CONCLUSION

Each aspect of the evaluation is explained as followed (1) Context evaluation is in good category. The indicators of each aspect are extracurricular background, with a result of 2.64 in good category; extracurricular goals, with a result of 2.39 in poor category; and extracurricular programs, with a result of 2.47 in poor category. Thus, from those three indicator aspects in the context, there are 2.50 in the good category. (2) Input evaluation is in poor category. Indicators of each aspect of the student condition with a result of 2.47 in the poor category, facilities with a result of 2.37 in poor category, the extracurricular coaches competence of 2.53 in good category. Thus, based on the three aspects of the indicator in the input, the result is 2.46 in poor category. (3) Process Evaluation in the category is poor. The indicators of each aspect are the implementation of extracurricular activities with a result of 2.29 in poor category, the evaluation of the extracurricular program of 2.40 in poor category. Thus, from both aspects of the indicator in the process, the result is 2.34 in poor category. (4) Product evaluation is in the poor category. The indicators of each aspect are mainly extracurricular activities of 2.27 is in the poor category. Thus, based on this aspect, the process results in 2.27 which is in poor category.

REFERENCES

- 1) Arifudin, O. (2022). Optimalisasi Kegiatan Ekstrakurikuler dalam Membina Karakter Peserta Didik. *JIIP-Jurnal Ilmiah Ilmu Pendidikan*, 5(3), 829-837.
- 2) Arini, I., Rahmat, A., & Suharto, T. H. (2021). Evaluasi Kegiatan Ekstrakurikuler Olahraga Di MAN 1 Serang. *Jurnal Pendidikan Setia Budhi*, 1(21), 31-34.
- 3) Asmani, J. M. (2011). *Buku Panduan Internalisasi Pendidikan Karakter di Sekolah*. Diva Press.

Evaluation of Sepak Takraw Extracurricular Activities at Elementary Schools in Purworejo Regency

- 4) Bimper Jr, A. Y. (2017). Mentorship of Black student-athletes at a predominately White American university: Critical race theory perspective on student-athlete development. *Sport, Education and Society*, 22(2), 175-193.
- 5) Marzuan, M. (2018). Manajemen Ekstrakurikuler dan Kontribusinya Terhadap Kecerdasan Siswa Di Madrasah Tsanawiyah Negeri (Mtsn) Kota Sawahlunto. *al-fikrah: Jurnal Manajemen Pendidikan*, 5(2), 207-218.
- 6) Mulyasa, E. (2003). *Menjadi kepala sekolah profesional dalam konteks menyukseskan MBS dan KBK*.
- 7) Noor, R. M. (2012). *The Hidden Curriculum*. Insan Madani
- 8) Nuryanto, S. (2017). Manajemen Kegiatan Ekstrakurikuler di SD Al Irsyad 01 Purwokerto. *Jurnal Kependidikan*, Vol. 5, No .1.
- 9) Stufflebeam, D. L., & Zhang, G. (2017). *The CIPP evaluastion model: how to evaluate for improvement and accountability*. New York: The Guilford Press.
- 10) Sudjana, D. (2006). *Evaluasi Program Pendidikan Luar Sekolah*. Remaja Rosda Karya
- 11) Sugiyono. (2017). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta.
- 12) Sukiman. (2012). *Pengembangan Sistem Evaluasi*. Insan Madani.
- 13) Tarbiyah, F., Keguruan, D. A. N., Ar-raniry, U. I. N., & Aceh, D. B. (2019). *Pembinaan Prestasi Non Akademik Siswa*.



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Analysis of Firm Characteristics on Leverage of Industrial Companies in Nigeria



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ABSTRACT: This study analyzed the effect of firm characteristics on the leverage of industrial companies in Nigeria for a 16 years period covering 2007-2022. This study specifically ascertained the effect of firm characteristics on the debt-to-equity of industrial companies. Panel data was used in the study, obtained from Nigerian Exchange Group Fact Books and related companies' annual financial reports of sampled industrial goods listed companies. Ex-Post Facto research design was employed and analyzed using a panel regression analysis. Variance inflation factor, Multicollinearity test and heteroskedasticity were applied to test the study's hypothesis. The result revealed that growth opportunities positively affect the leverage of industrial companies by 135.77%. The study recommends among other things that industrial companies strive to increase sales so as to enhance the profitability of firms which increases their liquidity level, increasing the equity of firms and monitor that leverage acquired is channeled into viable investments.

KEYWORDS: Profitability, Liquidity, Asset Tangibility, Growth Opportunities, Leverage, Debt-to-equity.

1. INTRODUCTION

Leverage (debt-to-equity) is a ratio between a company's equity held by common shareholders and its creditors. It is a gauge of a company's financial leverage, to put it another way. According to Amahalu and Obi (2022), the debt-equity ratio is a measurement of the proportional contributions of creditors and shareholders or owners to the capital used in a corporation. The debt-to-equity ratio, which measures a company's financial leverage, is determined by dividing its total liabilities by the value of its shareholders. The ratio serves as a gauge for how much a business relies on debt versus fully owned capital to fund its operations. More specifically, it shows whether shareholder equity would be sufficient to pay off all debts in the event of a downturn in business. A specific kind of gearing ratio is the debt-to-equity ratio (Fernando, 2021). According to Charles and Stephens (2013), total debt to equity ratio (also known as leverage) is used to assess an organization's capacity to repay long-term loans. The ratio illustrates how much of a firm's finance is under the control of outside parties. Long-term debts are included in the ratio's calculation as the numerator, while shareholders' equity serves as the denominator. Financial leverage is often defined as the ratio of a company's total debt to equity. Financial leverage is the amplification of risk and return through the use of fixed-cost financing, such as debt and preferred stock, according to Wijayanto, Dzulkirom, and Nuzula (2019). The predicted risk and return of a company increase with the amount of fixed-cost debt it uses. Chinaemerem and Anthony (2012) use a sample of thirty non-financial companies listed on the Nigerian Stock Exchange over a seven-year period, from 2004 to 2010, to investigate the effect of capital structure on financial performance of Nigerian businesses. The outcome demonstrates that a firm's financial measurements (ROA and ROE) are dramatically impacted when the capital structure is substituted by the debt ratio.

Profitability and the cost of capital are related to leverage. Leverage is frequently separated into operational and financial categories. Operational leverage, according to AbuTawahina and Helles (2015), deals with the erratic nature of EBIT and how a rise in revenue may be accompanied by a levered rise in EBIT depending on the movement of variable costs. Financial leverage addresses the erratic nature of earnings after taxes and the way that the tax benefits of debt interest raise value to owners.

Debt is typically considered to be the less expensive source of capital, and by incorporating the tax shield benefit, the cost of debt will be even less after taxes. Firms may maintain modest debt levels in order to maintain their financial flexibility, as opposed to leveraging the company in order to benefit from debt. In an effort to increase performance, the majority of businesses finance

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their operations through debt. Companies can subsequently invest in their operations without raising equity money, increasing their indebtedness. While a company's capital structure is vital, the best balance of equity and debt is needed to increase enterprise value and lower capital expenditures. In practice, there are so many elements at play that it is almost impossible to pinpoint the perfect leverage. Therefore, from 2006 to 2021, this study examines the traits of a firm that characterizes leverage of listed industrial companies in Nigeria.

2. LITERATURE REVIEW

2.1 Theoretical Framework

Market Timing Hypothesis of Capital Structure

According to the market timing theory of capital structure, companies issue new stock when their stock price is overvalued and buy it back when the price is undervalued (Baker and Wurgler, 2002). Share price fluctuations have an impact on corporate financing choices and, in turn, the firm's capital structure. Further, according to Baker and Wurgler (2002), equity transactions are totally timed to stock market conditions, therefore market timing theory does not shift to target leverage in accordance with the pecking order theory of capital structure. This suggests that adjustments to capital structures motivated by market timing have a lasting effect (Bessler et al., 2008). This statement explains why gearing ratios are inversely correlated with historical stock returns (Bessler, 2004). According to Welch, 2004 stock returns are the most significant factor influencing capital structure. However, according to Hovakimian (2006), market timing does not have a substantial long-term impact on the capital structure of the firms. According to the same data from Atieno (2009), the impact of market timing on gearing will completely disappear in two years. Three arguments were made by Saadah and Prijadi (2012) on the merits of MTT (Market Timing Theory), and they are as follows: When market value is high in relation to book value as well as when market value historically is high, managers frequently issue equity instead of debt; through the study of projected earnings prospects, businesses frequently sell equity at a time when investors are enthusiastic and optimistic; MTT is conducted when a company is experiencing rapid growth (the product life cycle's growth stage), as this would welcome a lot of market sentiment.

The announcement effect of securities issuance serves as the main proxy for the degree of information asymmetry because the pecking order theory implies that markets are semi-strongly efficient. The assumption of semi-strong form market efficiency is not a prerequisite for the market timing theory. As long as the relative cost of equity fluctuates over time for either rational or irrational reasons, windows of opportunity remain.

Signaling Theory

The signaling theory is a result of information gaps between shareholders and company management. Managers will first issue debt and then, as a last resort, equity if they think their companies are undervalued. In contrast, management will issue equity first if they think their company is overvalued. The signaling theory was first proposed by Ross (2007), who contends that managers' choice of capital structure will serve as a signal to the market if they have inside knowledge. The theoretical presumption that rising debt is a sign that managers are optimistic about future profits may have an impact on leverage. Managers sign debt contracts as a promise to pay future interest. Bankruptcy may result from failure to pay debt. This sends a message to the market that the company is confident it will generate enough cash flow to pay off its debt.

The remaining claimants to a company's cash flows are its shareholders. This is so because dividends come second in importance to interest payments that have been committed as obligations. As a result, share prices react to news about the financial structure more strongly than bond prices. If managers have high expectations for their company's future, the share price will seem more discounted than bond prices.

Although there are other capital structure theories, the signaling theory is the foundation of this study. The signaling theory implies that business managers will try to timing equity offerings based on how the market perceives their shares. The signaling theory is a result of information gaps between shareholders and company management. Managers will first issue debt and then, as a last resort, equity if they think their companies are undervalued. In contrast, management will issue equity first if they think their company is overvalued. Essentially, a company's capital structure is the accumulation of business managers' prior attempts to time the market.

2.2 Empirical review

Pratheepan and Banda (2016) looked into the variables affecting a sample of publicly traded firms in Sri Lanka. For a subset of Sri Lankan listed companies, it was discovered that profitability has a statistically significant inverse connection with leverage, although company size and growth had a statistically significant positive link with leverage. Tangibility and non-debt tax shelters indicate that leverage has no impact. In Tai (2015), the work of Titman and Wessels (1988) and Dittmar and Thakor (2007) is combined to provide a model of simultaneously determined capital structure and stock returns. According to empirical results

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from structural equation modeling (SEM) and confirmatory factor analysis (CFA), the determination of the capital structure is significantly influenced by factors such as stock returns, asset structure, growth, industry classification, uniqueness, volatility and financial rating, profitability, government financial policy, and managerial entrenchment. Iranian non-financial firms' capital structure drivers are examined by Alipour, Mohammadi, and Derakhshan (2015). The results of the study show that factors such as firm size, financial adaptability, asset structure, profitability, liquidity, growth, risk, and state ownership all have an impact on different components of the capital structure of Iranian firms. It has been found that a considerable portion of Iranian businesses' funding comes from short-term debt. By industry and business size, Songul (2015) assessed the effects of model variables on capital structure. Prospects for future growth, size, profitability, tangibility, and non-debt tax shelters are all used as firm-specific factors that affect a company's capital structure choice. The empirical data shows that traits related to growth potential, scale, profitability, tangibility, and leverage significantly correlate with one another. Leverage 1 (book value of total debt / total assets) is mostly unaffected by the explanatory variable for non-debt tax shields. Capital structure is impacted by growth potential, supporting the concept of a trade-off. Chadha and Sharma (2015) looked at the major factors affecting the capital structure of Indian manufacturing companies to identify any theoretical ramifications. Financial leverage in enterprises is determined by total debt to total capital and total debt to total assets. It was experimentally found that firm size, age, asset tangibility, growth, profitability, non-debt tax shield, business risk, uniqueness, and ownership structure are all closely related to financial leverage or significant drivers of capital structure in the Indian manufacturing industry. Ztekin (2015) investigates the global drivers of capital structure using a sizable sample of businesses from 37 nations. Leverage is a consistent function of firm size, tangibility, industry leverage, profitability, and inflation. Between 2001 and 2010, 870 publicly traded Indian corporations from the private and public sectors were studied. Handoo and Sharma (2014) determined the most crucial factors of the capital structure of these companies. The leverage structure used by businesses in India has been found to be significantly influenced by characteristics like profitability, growth, asset tangibility, size, loan cost, tax rate, and debt servicing capacity. Leland's (1994) capital structure model's optimal compensation dilemma between shareholders and agents was studied by He (2010), who discovered that the optimal leverage is decreased by the debt-overhang effect on endogenous managerial incentives. Their model predicts a negative link between pay-performance sensitivity and company size that is consistent with the evidence, and it also shows that smaller firms take on less leverage than their larger competitors due to the interaction of agency problems and debt overhang.

3. METHODOLOGY

3.1 Model Specification

The model is specified to capture firm characteristics as major determinants of capital structure. Thus, the econometric form of our model is expressed to avoid the problem of multicollinearity:

$$DETE_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 LQTY_{it} + \beta_3 NDTS_{it} + \beta_4 ATAN_{it} + \beta_5 GROP_{it} + \beta_6 COEQ_{it} + \beta_7 FRSI_{it} + \mu_{it} \quad (1)$$

Where:

<i>DETE</i>	=	<i>Debt to Equity (Proxy for leverage is computed as total liabilities divided by total equity)</i>
<i>PROF</i>	=	<i>Profitability (computed as profit before tax divided by total asset)</i>
<i>LQTY</i>	=	<i>Liquidity (computed as inventory days + trade receivable days – trade payable days)</i>
<i>NDTS</i>	=	<i>Non-Debt Tax Shield (computed as depreciation and amortization divided by total asset)</i>
<i>ATAN</i>	=	<i>Asset Tangibility (computed as fixed asset divided by total asset)</i>
<i>GROP</i>	=	<i>Growth Opportunities (computed as market capitalization divided by total equity)</i>
<i>COEQ</i>	=	<i>Cost of Equity (computed as cash dividend paid divided by market capitalization)</i>
<i>FRSI</i>	=	<i>Firm Size (computed as log of total asset)</i>
β_0	=	<i>Constant</i>
$\beta_1 - \beta_6$	=	<i>Slope Coefficient</i>
μ	=	<i>error term</i>

3.2 Research Design and source of data

This study made use of quantitative research to collect data employing the firm-level approach. Secondary data was for sampled industrial goods listed companies were sourced from Nigerian Exchange Group Fact Books and related companies' annual financial reports and footnotes for the periods covered.

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3.3 Sample Size and Sampling Technique

The population of this study consists of all the listed industrial goods firms in Nigeria as at December 2022, selected using a purposive sampling technique of industrial companies listed in the Nigerian Exchange Group market over the period 2007-2022.

4. RESULT AND FINDINGS

The average on asset tangibility is 0.52 with minimum of 0.02 and maximum asset tangibility of 0.96 indicates that asset tangibility has very little importance in determining the capital structure of listed industrial companies. A standard deviation of 0.2 further shows small spread around the average value. Also, the average leverage of 0.61 indicates that listed industrial companies have more asset than debt with a minimum and maximum of 0.036 and 2.23 respectively. The standard deviation of 0.61 shows small spread around the average value. In addition, average profitability of firms is 0.057828 with minimum of -1.80 and maximum profitability of 1.09. The standard deviation of 0.22 shows small spread around the average value. The overall average liquidity of listed industrial companies is 3.19 with minimum and maximum liquidity of 0 and 39 respectively. A standard deviation of 5.94 indicates small spread around the average value. Also, the overall average of non-debt tax shield is 0.041 with minimum and maximum non-debt tax shield of 0 and 0.15. A standard deviation of 0.024 indicates small spread around the average value. the average of firm size for of listed industrial companies is 16 with minimum of 12 and maximum firm size of 22. The standard deviation of 2.5 indicates that small spread around the average value. Furthermore, the average value of growth opportunity of listed industrial companies is -8.36 with minimum growth opportunities of -1176.19 and maximum growth opportunities of 51.96. The standard deviation of 109.48 further shows a wide spread from the average value. Lastly, the average cost of equity is 0.061 with minimum and maximum cost of 0 and 5.57 respectively. The standard deviation of 0.424 indicates a small spread around the average value.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ATAN	0.521475	0.244383	0.024537	0.957825
DETE	0.607218	0.292509	0.035548	2.229656
PROF	0.057828	0.215538	-1.79917	1.088969
LQTY	3.186047	5.941256	0	39
NDTS	0.040865	0.024302	0	0.149381
FRSI	15.51163	2.504939	12	22
GROP	-8.35527	109.4776	-1176.19	51.96112
COEQ	0.060953	0.423514	0	5.568043

Source: Computed by the Author (2023)

Testing for correlation among the variables in the model helps to avoid the possible problems of multicollinearity. Variance inflation factor (VIF) technique is used to detect the presence or absence of multicollinearity in the model. Variance inflation factors (VIF) measures how much the variance of the estimated regression coefficients is inflated as compared to when the predictor variables are not linearly related. Specifically, we adopt Green (2009) which allows a cut-off value of 10. From the result, it shows that the standard error of the model is inflated by 1.15 degrees which indicates that this model doesn't suffer the problem of multicollinearity.

Table 2: VIF Test of Multicollinearity

Variable	VIF	1/VIF
ATAN	1.29	0.772449
PROF	1.26	0.791584
FRSI	1.25	0.798259
NDTS	1.11	0.89735
LQTY	1.09	0.918208
GROP	1.04	0.960148
COEQ	1.03	0.971919
Mean VIF	1.15	

Source: Computed by the Author (2023)

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Based on heteroskedasticity test results, the insignificant values of the test results suggest the acceptance of null hypothesis and indicate that the model is free from heteroskedasticity problem as the probability is greater than 5%.

Table 3: Breusch-Pagan Test for Heteroskedasticity

Source	chi2	P
Heteroskedasticity	10.17	0.1014

Source: Computed by the Author (2023)

The within r-square of this model is 0.3613, with between r-square of 0.9605 and overall r-square of this model is 0.4091. The result of the wald chi2 (10.67) shows that the model is significant at 1% level of significance. The result of the regression result shows a positive significant relationship between growth opportunities and debt-to-equity while profitability, liquidity, non-debt tax shield, asset tangibility, cost of equity and firm size have insignificant effect on the leverage of listed industrial companies. By implication, an increase in growth opportunities, leads to a 137.87% increase in the leverage of listed industrial companies. Conclusively, growth opportunities have significant effect on leverage of listed industrial companies in Nigeria.

Table 4: Effect of firm characteristics on leverage of industrial companies in Nigeria

DETE	Coefficient	Standard Error	Z	P> z
PROF	1.1959	4.59752	1.33	0.185
LQTY	3.179645	4.833108	0.66	0.511
NDTS	2.079008	4.1694	0.00	0.998
FRSI	7.913075	7.291565	1.09	0.278
ATAN	-1.8429	4.58158	-1.38	0.168
GROP	1.357732	0.1297908	10.62	0.000
COEQ	6.555478	3.27335	0.15	0.880
_cons	-24.58926	97.43136	-0.25	0.801
R-square	Within 0.3613			
	Between 0.9605			
	Overall 0.4029			
Wald chi ²	10.67 (0.0000)			

Source: Computed by the Author (2023)

Findings from the study indicates that this model doesn't suffer the problem of multicollinearity. Also, the test for heteroskedasticity shows that the model is free from problems of heteroskedasticity. In addition, growth opportunities are found to have a significant positive impact on debt-to-equity of listed industrial companies in Nigeria. The growth opportunities of listed companies account for a 137.87% increase in leverage. This means that as companies grow, so does their debt-to-equity, this supports the trade-off theory. Similar findings by (Mbonu & Amahalu, 2021) found that one naira increase in revenue growth will cause debt-to-equity to reduce by 3.75%, thereby exhibiting a negative effect on listed Insurance companies in Nigeria. Chadha and Sharma (2015); Songul (2015) and Pratheepan and Banda (2016) also found that growth opportunities are a strong determinant of capital structure in India's manufacturing sector. Similarly, Pratheepan and Banda (2016) found growth to be positive statistically significant positive relationship with leverage for selected listed companies in Sri Lanka.

5. CONCLUSION

This study analyzes the effect of firm characteristics on the leverage of listed Industrial Companies in Nigeria. The study revealed that only growth opportunities has significant effect on the leverage of listed industrial companies in Nigeria. Asset tangibility, liquidity, firm size, cost of equity, profitability and non-debt tax shield were found to have insignificant effect on leverage of listed industrial companies. The study found that an increase in growth opportunities increases the leverage of industrial companies by 137.87%.

The study recommends that industrial companies strive to increase sales so as to enhance the profitability of firms which increases their liquidity level, increasing the equity of firms and monitor that leverage acquired is channeled into viable investments.

REFERENCES

- 1) AbuTawahina, M. S., & Helles, S. A. (2015). Capital structure and firms financial performance: Evidence from Palestine. *Islamic University, Gaza*, 2-96.

Analysis of Firm Characteristics on Leverage of Industrial Companies in Nigeria

- 2) Acaravci, S. K. (2015). The determinants of capital structure: Evidence from the Turkish manufacturing sector. *International journal of economics and financial issues*, 5(1), 158-171.
- 3) Alipour, M., Mohammadi, M. F. S., & Derakhshan, H. (2015). Determinants of capital structure: an empirical study of firms in Iran. *International Journal of Law and Management*, 57(1), 53-83.
- 4) Amahalu, N.N., & Ezechukwu, B.O. (2022). Effect of cash holding on financial performance of selected quoted insurance firms in Nigeria. *Journal of Marketing Management and Consumer Behavior*, 2 (1), 90-112.
- 5) Atieno, O. P. (2009). An analysis of the strengths and limitation of qualitative and quantitative research paradigms. *Problems of Education in the 21st Century*, 13(1), 13-38.
- 6) Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *The journal of finance*, 57(1), 1-32.
- 7) Bessler, W., & Bittelmeyer, C. (2008). Patents and the performance of technology firms: Evidence from initial public offerings in Germany. *Financial Markets and Portfolio Management*, 22(4), 323-356.
- 8) Chadha, S., & Sharma, A. K. (2015). Capital structure and firm performance: Empirical evidence from India. *Vision*, 19(4), 295-302.
- 9) Charles, K. K., & Stephens Jr, M. (2013). Employment, wages, and voter turnout. *American Economic Journal: Applied Economics*, 5(4), 111-143.
- 10) Chinaemerem, O. C., & Anthony, O. (2012). Impact of capital structure on the financial performance of Nigerian firms. *Oman Chapter of Arabian Journal of Business and Management Review*, 34(969), 1-19.
- 11) Dittmar, A., & Thakor, A. (2007). Capital structure and security issuance under heterogeneous beliefs. In *Boston College Working Paper*.
- 12) Fernando, J. (2021). Debt-to-equity ratio. <https://www.investopedia.com/terms/d/debtequityratio.asp>. Accessed 11/07/2021
- 13) Handoo, A., & Sharma, K. (2014). A study on determinants of capital structure in India. *IIMB Management Review*, 26(3), 170-182
- 14) Hovakimian, A. (2006). The role of target leverage in security issues and repurchases. *The Journal of Business*, 77(4), 1041-1072.
- 15) Öztekin, Ö. (2015). Capital structure decisions around the world: which factors are reliably important?. *Journal of financial and quantitative analysis*, 50(3), 301-323.
- 16) Pratheepan, T., & Yatiwella, W. B. (2016). The determinants of capital structure: Evidence from selected listed companies in Sri Lanka. *International Journal of Economics and Finance*, 8(2).
- 17) Ross, S. L. (2007). The Optimal Capital Structure of Banks: Balancing Deposit Insurance, Capital Requirements and Tax-Advantaged Debt. *Department of Economics University of Connecticut: Working papers*, (2007-29).
- 18) Saadah, S., & Prijadi, R. (2012). Capital structure's dynamic response to exogenous variables: A case of listed manufacturing firms in Indonesia. *International Journal of Financial Research*, 3(2), 86.
- 19) Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, 43(1), 1-19.
- 20) Wijayanto, A., Dzulkirom, M., & Nuzula, N. F. (2019). The effect of competitive advantage on financial performance and firm value: evidence from Indonesian manufacturing companies. *Russian Journal of Agricultural and Socio-Economic Sciences*, 85(1), 35-44.



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Improving Script Writing Skills through the Application of Problem-Based Learning Model



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ABSTRACT: This study aims to improve the script writing skills of students in grade VIII Junior High School using the problem based learning model. This study is a classroom action research. The research was carried out in class VIII in one of the junior high schools in the city of Solo, from January to March 2023. The data sources used are documents and field notes from the researchers' observations. Data analysis techniques with observation, in-depth interviews, tests or assignments and document analysis. Data validity by triangulation of data sources, triangulation of methods, and review of informants. The results of the study can be concluded that there was 1) an increase in the completeness score of script writing skills from 63.64% to 100%, 2) there was an increase in the average score of student script writing from 74.32 to 86.64.

KEYWORDS: writing skills, problem based learning, classroom action research

I. INTRODUCTION

Indonesian is also one of the subjects that plays an important role in all subjects in school. Indonesian teach various skills such as writing, reading, listening, and speaking. All these skills are needed in all subjects. Some people argue that Indonesian subject is an easy subject and does not need to be studied seriously (Ningrat, Tegeh & Sumantri, 2018). Amaliyah (2018) stated that Indonesian subjects are still considered boring, unimportant and unpleasant. Because students assume that in Indonesian subject there are many reading texts that require them to read and write.

Writing skills are one of the competencies taught in Indonesian lessons. This writing skill is very important to be taught to students in supporting their success in learning. Graham, et al. (2014) found that writing is very important in supporting student success inside and outside school. This is because through writing activities, the material taught can hone students' reading skills.

Many studies have been conducted on text writing skills such as the research of Utin Faradila, Salim, and Imran (2015) and (Rohman, Rasna, and Darmayanti 2019), from the results of these studies show that writing learning is important for students to produce and increase knowledge. Erizal (2020) also found that through writing learning students will have the knowledge and skills to express or express ideas or ideas, opinions, thoughts, and feelings so that thinking power and creativity develop.

Learning to write is still considered boring by students which results in students' interest and ability in writing not developing optimally (Hidayah, Wahyudi, & Hastanto, 2020). In fact, by writing, students are able to construct various knowledge or knowledge they have in a writing, both in the form of essays, articles, scientific reports, news, short stories, poems and so on (Riana & Setiadi, 2017). Fun learning can motivate students so that they can increase efficiency in learning (Mahmoud and Abdelrahman, 2014). The expected goal in learning to write is for students to be able to understand and be able to express some of the things they capture, such as ideas, opinions, messages and feelings in written form (Sarjono Owon, 2017).

Problems in learning to write as above also occur in class VIII C of Diponegoro Islamic Junior High School Surakarta on the skill of writing drama scripts. Based on the initial interview, it can be seen that the writing skills of students in class VIII C of Diponegoro Islamic Junior High School Surakarta are still not optimal. The lack of optimal writing skills in students is indicated by several indicators that show that writing skills are low. This can be shown in several indicators that can be seen from students' writing in writing drama scripts in Indonesian lessons. Suroso (2015: 23) argues that a drama script that is worth staging is a drama script that not only pays attention to dialogue at the time of performance, but also pays attention to contextual dialogues in accordance with the demands of the times that are changed from the script without deviating from the author's intent.

Basically, in Indonesian learning, many students have less interest and culture and therefore students' reading competence is still lacking (Nurhayati, 2015). In fact, in writing a drama script, students must read a lot because writing a drama script is pouring

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ideas and ideas that are in the mind into a writing from the object seen or observed. The characteristic of a drama script is the presence of skills or dialogue in the drama script. In compiling, the author really pays attention to the conversations of characters in his daily life (Hani K, 2017).

Problem-based learning (Probled Based Learning) is a learning model that focuses on problem-solving activities. Through the Probled Based Learning approach, students are expected to have creative thinking skills in solving a problem (N & Anugraheni, 2017). This learning requires a group or discussion group, so that they can exchange ideas or ideas about a problem to find the best solution. In addition, teachers as class facilitators have the task to regulate the course of learning activities using the Probled Based Learning model. The approach is integrated and intended to produce a learning model that allows students to develop their potential (Khuzamamah, 2017). For this reason, stages that must be carried out in problem-based learning are needed, including (1) managing questions or problems (learning by organizing and discussing questions and avoiding simple answers or problem solving); (2) interdisciplinary focus (learning by focusing on a specific subject on a problem investigated by students of various subjects); (3) authentic investigation, namely learning requires students to find an authenticity (authentic) and find solutions to real problems; (4) creating artifacts and exhibits (problem-based learning requires students to create products in the form of artifacts and exhibits on a problem-solving basis); (5) collaboration is problem-based learning that collaborates and is continuous with each other in a complex manner (Arends, 2012). Actually, a study on learning models through discussion groups using cooperative learning models such as NHT and STAD is also effective in fostering student competence in learning (Kusumawati, H., & Mawardi, M., 2016)

The importance of learning motivation and writing skills as explained above is not supported by the reality in schools. Most students in schools still think that learning motivation does not affect students to write plays easily, so they consider that it is difficult to do. This also happened to students in class VIII C of Diponegoro Islamic Junior High School Surakarta.

Yuliatma explained that basically the teaching of literature in schools is still low, especially in drama material. Until now students are accustomed to reading and memorizing what has been conveyed by the teacher without the motivation to understand, without giving ideas from one's own mind. This situation causes students to learn individually, involving less social interaction from students, causing boredom (Yuliatma, 2021). With direct learning, students can easily understand something in life and find ways to solve it (Rini & Mawardi, 2015).

From some of the problems above, to increase learning motivation and writing skills requires a fun learning model. One of the low success rates of students in writing can be caused by learning models that are not in accordance with the learning style and background of students (Achmad & Yusuf, 2014). Therefore, teachers should be able to apply a learning model that is suitable for students in learning (Amin, 2017). Problem-based learning (PBL) or in Indonesian can be interpreted as problem-based learning. Problem-based learning is used to spur students to think higher order with problem-oriented situations. Through the application of the Problem Based Learning learning model, students' ability to induct in solving problems will increase (Husen et al, 2017). The learning model has distinctive characteristics by requiring students to think critically, have problem-solving skills, and acquire the most important knowledge and concepts from learning materials that students can use in learning in the real world. This study aims to increase learning motivation and drama writing skills by using the application of the Problem Based Learning model to grade VIII C students of Diponegoro Islamic Junior High School Surakarta.

II. METHOD

This type of research is qualitative research where researchers become the main instrument in data collection and data analysis (Cooper & White, 2012). This form of research is a form of class action or classroom action research. The subjects of this study were grade VIII C students of SMP Islam Surakarta in the first semester of the 2022/2023 academic year, totaling 22 students. In general, students aged 13-14 years with different levels of character and ability, both economic, social and thinking abilities. The reason for the choice of subject is that the script writing skills of students at that level are not optimal so that they require improvement in learning.

Data sources from this study come from informants, documents, and events. The data in this study includes notes of interviews with teachers, student writing, questionnaire test results, syllabus and Learning Implementation Plan (RPP) writing materials, grade lists, and photos of learning activities to write drama scripts. The data collection techniques used are observation, tests, interviews, and document analysis. The data analysis technique that will be used in this study is a critical analysis technique, where this technique reveals the weaknesses and strengths of student and teacher performance in the teaching and learning process in the classroom during the research.

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III. RESULT AND DISCUSSION

Classroom action research is a harmonious process that allows teachers and students to work together to achieve an effective learning process (Stinger, Cristensen & Baldwin, 2010: 2). The objectives of general action research can be classified into two main ideas, namely increasing the role of teachers and increasing the professional identity of a teacher (Lankshear & Knobel, 2004: 4). This class action research was carried out at VIIIIC Diponegoro Islamic Junior High School Surakarta as many as III cycles. In the findings of research conducted by researchers found that there was an increase in drama writing skills in students, this is in line with research conducted by Zamzam (2016) which concluded that one of the advantages of Problem Based Learning as an effort to develop students' critical thinking oriented skills in processing information. The following is a diagram of the completeness of the students' script writing skills in each cycle.

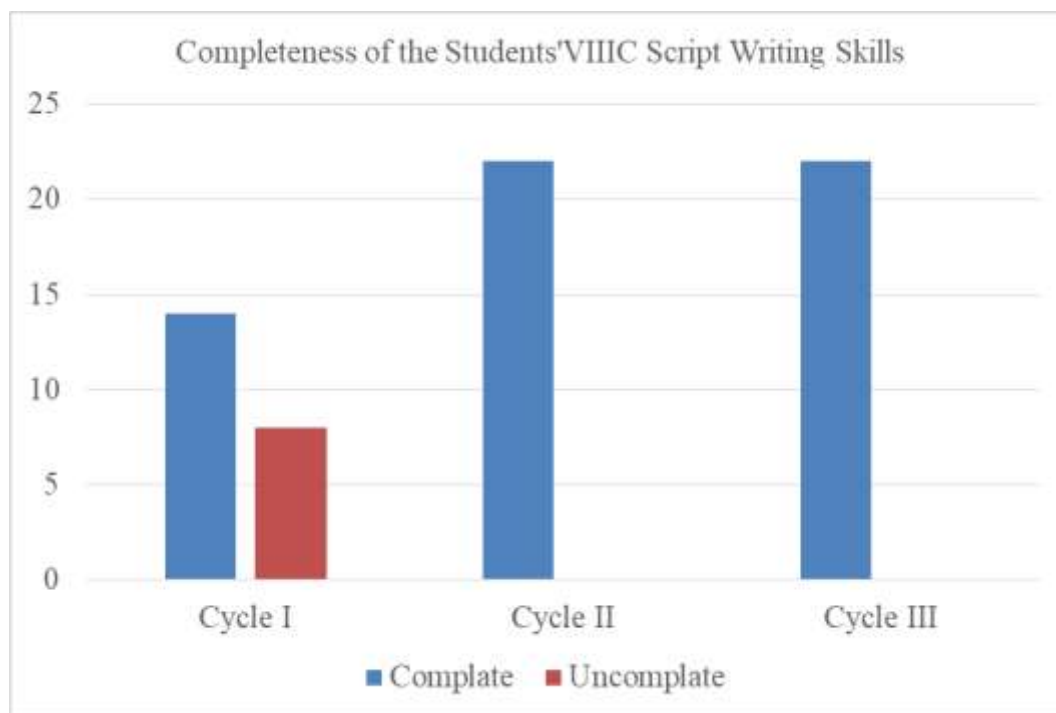


Figure 1. Completeness of the Value of Script writing Skills in Each Cycle.

CYCLE I

The implementation of learning in Cycle I is carried out as many as two meetings according to the specified schedule, namely Wednesday, February 8, 2023 in the last hour (12.00-13.30) and Thursday, February 9, 2023 in the first hour (07.30-09.00). The activities carried out in Cycle I include the following activities.

Learning activities begin with the teacher conveying greetings to students, joint prayer, attendance, and apperception to start learning. The next step is for the teacher to give perception. Apperception activities carried out by teachers include explaining about: 1) drama terms, 2) elements of drama, 3) types of drama, 4) drama scripts, 5) asking questions about drama, and 6) teachers providing examples of drama scripts. Teachers must be able to condition the class during learning (In'am, 2017).

Then the teacher divides the students into 5 groups with each group consisting of 4-5 students. Each group is given the opportunity to help each other to master teaching materials through questions and answers or discussions between group members. Students can complement each other and correct the work they do by working together in groups (Khuzaemah et al, 2018).

The next activity carried out by students is writing drama scripts in groups. Previously, the teacher gave an example of a drama script displayed on the projector. All students in the group must take part in this group task. After the assignment is completed, the teacher instructs the students to collect the assignments that have been done together which then become data for Cycle I.

Based on the results of the final test of Cycle I, it can be seen that the lowest score obtained by students is 70.00 and the highest score is 80.00, and the average score obtained is 74.32. The average grade score obtained at 74.32 is not above the KKM set with a KKM of > 75.00. With this, class VIIIIC students classically have not achieved complete learning Indonesian script writing skills.

Judging from the completeness of learning, it can be seen that the number of students who have achieved learning completeness is as many as 14 students or 63.64% of the total students. Some others, namely as many as 8 students or 36.36% have not reached the KKM score. This shows that the class completion rate in grade VIIIIC students in Cycle I has only reached 63.64%.

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CYCLE II

The implementation of learning in Cycle II is carried out as many as two meetings according to the specified schedule, namely Wednesday, February 15, 2023 in the last hour (12.00-13.30) and Wednesday, February 22, 2023 in the last hour (12.00-13.30). The activities carried out in Cycle II include the following activities.

In Cycle II, teachers put more emphasis on the quality of the results of writing drama scripts. The teacher also always reminds students so that mistakes that occur in Cycle I do not repeat themselves in Cycle II. After the play script is completed by the students, the teacher asks each student to exchange their work with other students for correction. It aims to train students in assessing the work of friends. After all is done, all the results of the students' work are collected for the teacher to correct. From this it can be seen how to improve students' skills in writing drama scripts in Cycle II

Based on the results of the final test of Cycle II, it can be seen that the lowest score obtained by students is 85.00 and the highest score is 87.00, and the average score obtained is 85.73 (Complete). The average grade score obtained at 85.73 has exceeded the KKM set with $KKM > 75.0$. On this basis, class VIII C students have classically achieved complete learning Indonesian script writing skills.

Based on the results of the final test of Cycle II, it can be seen that the lowest score obtained by students is 85.00 and the highest score is 87.00, and the average score obtained is 85.73 (Complete). The class average score obtained of 85.73 has exceeded the KKM set with a KKM of > 75.0 . On this basis, class VIII C students have classically achieved complete learning Indonesian script writing skills.

CYCLE III

The implementation of learning in Cycle III is carried out as many as two meetings according to the specified schedule, namely Wednesday, February 29, 2023 in the last hour (12.00-13.30) and Thursday, February 30, 2023 in the first hour (07.30-09.00). The description of the implementation of Cycle III at each meeting can be stated as follows.

Face-to-face activities begin with the teacher greeting and greeting students and conducting attendance and apperception as an introduction to the lesson. In the perception activity, the teacher mentioned the characteristics of the drama script, asked questions related to the drama script, and displayed examples of drama scripts along with pictures through multimedia impressions.

After the explanation, the teacher assigns tasks to students to observe, read, and understand examples of problems given. Students work in groups to analyze the structure, features, and language of drama scripts. Furthermore, students are given a group task to identify the definition, characteristics, types, structure, and rules of the drama script writing text from various reference sources that have been read. They were also asked to present the results of the identification.

Furthermore, students in groups are asked to make conclusions about the definition, characteristics, types, structure, and rules of the drama script text based on various sources that have been read. After that, students are asked to write a drama script again to become data for Cycle III.

Based on the results of the final test of Cycle III, it can be seen that the lowest score obtained by students is 85.00 and the highest score is 90.00, and the average score obtained is 86.64 (Complete). The average grade score obtained at 86.64 has exceeded the KKM set with $KKM > 75.00$. On this basis, grade VIII C students of Diponegoro Islamic Junior High School Surakarta have classically achieved complete learning Indonesian script writing skills.

Judging from the number of scores, it can be seen that the number of students who have achieved learning completeness with $KKM > 75.00$ is as many as 22 students or 100.00% of the number of students. As for students who have not reached KKM, there is no longer or 0.00%. This shows that the level of class completeness in grade VIII C students of Diponegoro Islamic Junior High School Surakarta has reached 100.00%. In the comparison data on the value of students' writing skills, there is progress, this is in line with Rohman's research (2018) which found that there was a change in percentage increase in the application of the Problem Based Learning model.

IV. CONCLUSIONS

The application of the Problem Based Learning model was able to increase students' knowledge of drama scripts with the average score of drama writing skills in students which increased from 74.32 at the end of Cycle I actions, increased to 85.73 at the end of Cycle II actions, then increased again to 86.64 (completed) at the end of Cycle III actions. Learning completeness also increased from 22.73% at the initial condition, increased to 63.64% at the end of Cycle I actions, increased again to 100% at the end of Cycles II and III. The improvement of script writing skills is strongly influenced by teacher skills in each different cycle. Starting with group division, creating a comfortable learning atmosphere, and using interesting media. It is recommended for researchers to further

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develop the Problem Based Learning model because it provides opportunities for students to play an active role, collaborate, think critically, and produce work in learning.

REFERENCES

- 1) Achmad, D., & Yusuf, Y. 2014. Observing Pair-Work Tasks in an English Speaking Class. *International Journal of Instruction*, 7(1), 151-164.
- 2) Amaliyah, Siti. 2018. Penggunaan Media Gambar untuk Meningkatkan Keterampilan Menulis Paragraf Deskripsi Siswa Sekolah Dasar Pekanbaru. *Jurnal Tunjuk Ajar*, 1(1), 44-56.
- 3) Amin, Ahmad Kholiqul. 2017. Kajian konseptual model pembelajaran blended learning berbasis web untuk meningkatkan hasil belajar dan motivasi belajar. *Jurnal Pendidikan Edutama*, 4(2), 51-64.
- 4) Arends, R. I. 2012. *Learning to Teach* (Ninth Edit). New York: The McGraw-Hill Companies, Inc.
- 5) Cooper, K., & White, R. E. 2012. *Qualitative, Quantitative and Mixed Methods Approaches* (Fourth Ed). Los Angeles: Sage Publications.
- 6) Erizal, Asnita. Gani. 2020. Pengaruh Penggunaan Model Discovery Learning Terhadap Keterampilan Menulis Teks Eksplanasi Siswa Kelas VIII SMP Negeri 20 Padang. *Jurnal Pendidikan Bahasa dan Sastra Indonesia*. 9(1).
- 7) Fadillah, U. M., Salim, I., & Imran, I. 2020. Upaya Guru dalam Mengembangkan Keterampilan Berpikir Kritis Siswa melalui Powerpoint pada Pembelajaran Sosiologi. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, 9(7).
- 8) Graham, S., Capizzi, A., Harris, K. R., Habert, M., & Morphy, P. 2014. Teaching writing to middle school students: A national survey. *Reading and Writing*, 27(6), 1015-1042.
- 9) Hidayah, N., Wahyuni, R., & Hasnanto, A. T. 2020. Pengembangan media pembelajaran gambar berseri berbasis pop-up book untuk meningkatkan keterampilan menulis narasi bahasa Indonesia. *TERAMPIL: Jurnal Pendidikan dan Pembelajaran Dasar*, 7(1).
- 10) Husen, Abu, Sri Endah Idriwati, Umie Lestari. 2017. Peningkatan Kemampuan Berpikir Kritis dan Keterampilan Proses Sains Siswa SMA melalui Implementasi Problem Based Learning dipadu Think Pair Share. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 2(6), 852-860.
- 11) In'am, A. 2017. Learning Geometry Through Discovery Learning Using a Scientific Approach. *International Journal of Instruction*, 10(1), 55-70.
- 12) Khuzaemah, Emah, Lilik Herawati, Hikmah Uswatun Ummi. 2018. Model Pendidikan Literasi dengan Menggunakan Pendekatan Saintifik. *Indonesian Language Education and Literature* 3(2), 227-239.
- 13) Khuzaemah, Emah, Lilik Herawati. 2017. Pembelajaran Menulis Esai Menggunakan Model Cooperative Integrated Reading and Composition (CIRC) berbasis Life Skills. *International Journal of Instruction*, 2(2), 148-162.
- 14) Kusumawati, H., & Mawardi, M. 2016. Perbedaan Penerapan Model Pembelajaran Kooperatif Tipe NHT dan STAD Ditinjau dari Hasil Belajar Siswa. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, 6(3).
- 15) Lankshear, C., Knobel, M. 2004. *A Handbook for Teacher Research: from design to implementation*. United States Of America: Open University Press.
- 16) Mahmoud, A. K. dan Abdelrahman. 2014. The Effect of Using Discovery Learning Strategy in Teaching Grammatical Rules to first year General Secondary Student on Developing Their Achievement and Metacognitive Skills. *International Journal of Innovation and Scientific Research*, 5(2), 146-154.
- 17) N, N. R., & Anugraheni, I. 2017. Peningkatan Aktivitas Belajar Matematika Melalui Pendekatan Problem Based Learning Bagi Siswa Kelas 4 SD. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 7(3)
- 18) Ningrat, S.P., I.M. Tegeh, & M. Sumantri. 2018. Kontribusi Gaya Belajar dan Motivasi Belajar terhadap Hasil Belajar Bahasa Indonesia. *Jurnal Ilmiah Sekolah Dasar*. 2(3), 257-265.
- 19) Nurhayati, N. 2015. Model Pembelajaran Menulis Cerita Pendek dengan Menggunakan Teknik Brainwriting yang Berorientasi pada Kreativitas Siswa. *Riksa Bahasa* 1(1), 14-26.
- 20) Rahmah, S. 2018. Peningkatan Hasil Belajar Materi Keunggulan Lokasi Indonesia Melalui Pendekatan Problem Based Learning pada Siswa Kelas VII B SMPN 6 Kota Bima. *BRILIANT: Jurnal Riset Dan Konseptual*, 3(1), 92-100.
- 21) Riana, R., & Setiadi, S. 2017. Penerapan Model Pembelajaran Kooperatif Teknik Mind Mapping Dalam Meningkatkan Keterampilan Menulis Karangan Narasi Ekspositoris Pada Mata Pelajaran Bahasa Indonesia Peserta Didik Kelas XII Smk Swadaya, Semarang. *Jurnal Dinamika Sosial Budaya*. 18(1).
- 22) Rini, R., & Mawardi. 2015. Peningkatan Keterampilan Proses Saintifik dan Hasil Belajar Siswa Kelas 4 SDN Slungkep 02 Tema Peduli Terhadap Makhluk Hidup Menggunakan Model Problem Based Learning. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 5(1), 103-113.

Improving Script Writing Skills through the Application of Problem-Based Learning Model

- 23) Rohman, A., Rasna, I. W., & Darmayanti, I. A. M. 2019. Penerapan Media Video Breaking News Di Televisi Guna Meningkatkan Keterampilan Menulis Teks Eksplanasi Pada Siswa Kelas VIII SMP Mutiara Singaraja. *Jurnal Pendidikan Bahasa Dan Sastra Indonesia Undiksha*. 9(2).
- 24) Sarjono Owon, R. A. 2017. Pengembangan Bahan Ajar Menulis Berbagai Jenis Teks Bertema Kearifan Lokal Sikka Bagi Siswa SMP. *JINoP: Jurnal Inovasi Pembelajaran*, 3(1).
- 25) Suroso. 2015. *Drama Teori dan Praktik Pementasan*. Yogyakarta: Elmetera.
- 26) Yuliatma. 2021. Pengaruh Media Karikatur terhadap Kemampuan Menulis Naskah Drama pada Siswa Kelas IX A SMP Negeri 2 Muara Bungo. *Jurnal Tunas Pendidikan*. 4(1), 262-162.
- 27) Zamzam, K. F. 2016. Pendekatan Problem Based Learning Untuk Mengembangkan Kemampuan Berpikir Kritis Mahasiswa. *Jurnal Pedagogi*, 5(2), 279–286.



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Problems of Learning Sports and Health Physical Education in the Special School



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ABSTRACT: This study has the main objective of describing a situation concerning the problems of physical education, sports and health in Special Schools which focus on: (1) Analyzing the process of preparing for physical education in SLB (2) Analyzing the process of implementing Physical Education learning activities in SLB and (3) Analyzing the form of physical education learning assessment in SLB.

This study uses evaluation research methods. Data were analyzed using the Countenance Stake Model. This model emphasizes two types of operations, namely descriptions and judgments, and distinguishes three phases in the evaluation of Physical Education learning in SLB, namely: (1) preliminary (antecedent) stage, (2) process (transaction) stage, (3)) stage of results (outcomes). The subjects of this study were school supervisors, school principals, physical education teachers. Data collection techniques in this study using interview techniques. Research data were analyzed using qualitative descriptive analysis techniques. The results of this study indicate: (1) the preliminary stage (antecedent), namely the description of Penjasorkes learning is good, because the learning objectives have been adapted to the conditions of the students, the teacher has qualifications so that they are able to compile semester programs, syllabus and lesson plans, the condition of supporting infrastructure, teacher understanding on learning strategies and having mastery of Penjasorkes learning materials; (2) the process (transaction) stage, namely the description of Physical Education learning is quite good because the implementation of Physical Education learning is in accordance with the curriculum, namely using integrative thematic learning with a scientific approach and carrying out authentic assessments; (3) the outcome stage, namely the measurement of the results of the teacher's assessment which includes aspects of attitude, knowledge.

KEYWORDS: learning problems, physical education and health, special school.

INTRODUCTION

Sports and health physical education which is one unit of education has an important role in shaping the growth and development of children. Physical education learning is implemented from elementary school (SD) to be able to stimulate natural growth, motor skills, knowledge and emotional development so that physical education learning is able to improve students' ability to develop their psychomotor and cognitive abilities. (Farlda Noor Isnaini, 2021).

Students with special needs are students who grow and develop with various differences from students in general. The term students with special needs does not always refer to the disability they experience, but refers to special services needed because they experience an obstacle or ability above average. Although the types of students with special needs are very diverse, in the context of special education in Indonesia students with special needs are categorized in terms of blind students, deaf students, mentally retarded students, disabled students, disabled students, and smart and talented students. special, (Sukadari, 2020)

Special schools are special schools for students with special needs which aim to provide opportunities for students to obtain education, (Nurrohman Jauhari et al., 2020). In the implementation of learning, several internal and external factors must be prepared so that learning can run smoothly and optimally. Human resources, both school principals, teachers, curriculum, facilities and infrastructure, are internal factors that greatly influence the learning process of students. Curriculum outreach to parents and the community needs to be increased by the school to support the course of learning. In special schools, sports teachers as adaptive physical education practitioners play a central role in the success of adaptive physical education learning. Likewise with physical and motor barriers where in general physical and motor barriers are the inability of a part of the body to function normally, the impact of injuries, genetics, disease or development that is not completely perfect for the sake of the need for

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learning and learning processes for special services. adaptive physical education and can create an educational agenda so that it can be equated with the conditions of students,(Febbry Pratiwi, Cyintia Novita K., 2020).

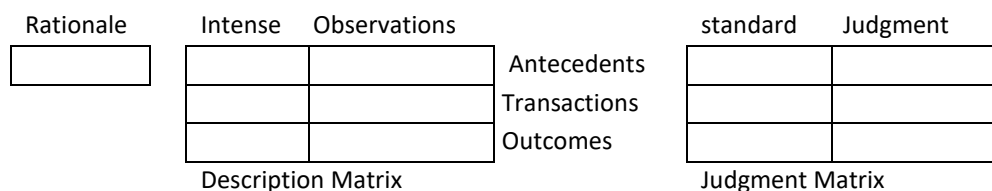
METHODS

Evaluation Models

The type of evaluation in this study is program evaluation, namely the Penjasorkes learning program implemented in special schools throughout Bantul Regency. This study uses a qualitative research method with a countenance approach. The researcher collects the data based on the research questions which will contain non-numerical related methodologies which are categorized under the qualitative framework.

The Countenance Stake Model consists of two matrices. The first matrix is called the description matrix and the second is the consideration matrix. The new consideration matrix can be done by the evaluator after the description matrix is done, and distinguishes three phases in the evaluation of physical education learning in SLB, namely: (1) The preliminary stage (antecedents) in this study is preparation for learning; (2) The process stage (transactions) is the implementation of learning activities; and (3) the Outcomes of this program, namely the learning outcomes of students obtained from the learning assessment process.

This evaluation model diagram describes the description and stages, shown in the following diagram.



Time and Place of Research

This research was conducted on 6 February - 31 March 2023 at special schools in Bantul Regency

Research subject

The population in this study was SLB in Bantul Regency, which consisted of 20 schools. The sampling technique used random sampling with a total sample of 3 schools, namely SLB N 1 Bantul, SLB N 2 Bantul and SLB Marsudi Putra Bantul. The research subjects included PJOK teachers.

Data Collection Techniques and Instruments

Data collection techniques in this study using interview techniques. Researchers conducted interviews, recorded and observed the process of implementing Physical Education learning activities in schools. Documentation is used to assess the administrative completeness of teaching teachers.

Table 2. Penjasorkes Learning Evaluation Model Instrument

Aspects of the Review	DescriptionMatrix	Respondents	Data collection technique
	Intents		
<i>Antecedents</i>	Learners	Teacher,	Interview
	Teacher		
	Learning materials		
	Infrastructure		
	Learning Planning		
<i>Transactions</i>	Implementation of Learning	Teacher,	Interview
	Open learning		
<i>Outcomes</i>	Evaluation	Teacher,	Interview

Data analysis technique

Qualitative Analysis

a. Data Reduction

A selection process, focusing on simplifying, abstracting, and transforming data that emerges from field notes. The data obtained from school supervisors, school principals and Physical Education teachers will increase and widen, so it needs to be reduced,

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summarized, sorted and looked for patterns. Through data reduction, what can be done in the field in the form of raw and organized data becomes easier to control and systematic and does not obscure the meaning of research.

b. Data Presentation (Data Display)

Qualitative data is a form of narrative text that is scattered part by part and not simultaneously, is poorly structured, and is very excessive and accumulates so as not to make it difficult to understand the information, it needs to be displayed in matrix charts, graphs, narratives and other forms of tables, photographs photos and so on.

c. Conclusion Drawing and Verification

The data that has been collected is put together into an information chart which becomes a group formulation with the guideline that the data can be interpreted without any additions. The final opinions are an overview of the research findings based on the previous descriptions obtained. Conclusions must be relevant to the theme, research objectives and research findings that have been interpreted and discussed.

RESULT AND DISCUSSION

Research result

a. Antecedent

The research results for each indicator on the antecedent component with PJOK teacher subjects are explained as follows;

DescriptionMatrix		Judgment Matrix	
Intents	Observations	standard	Judgment
Teachers must conduct screening and assessment of students	The accuracy of conducting the assessment made by the PJOK teacher that the Penjasorkes teacher and the PJOK class carry out the assessment	The assessment process includes recording, collecting, separating, assessing and translating information in identifying student weaknesses and planning teaching strategies and approaches according to their abilities	Screening and assessment refer to Penjasorkes learning objectives and are adapted to the curriculum and characteristics of students.
Teachers must make learning tools, one of which is lesson plans	The accuracy of the achievement of the RPP made by the Physical Education teacher that all Physical Education teachers have planned lessons	The RPP components based on the Special Education Process Standards include: (1) subject identity/lesson themes; (2) competency standards; (3) basic competence; (4) competency achievement indicators; (5) learning objectives; (6) teaching materials contain relevant facts, concepts, principles, and procedures; (7) the time allocation is determined according to the needs for achieving KD and learning load; (8) the learning method is used by the teacher to create a learning atmosphere and learning process according to the characteristics of the students; (9) learning activities include introduction, core and closing; (10) assessment of learning outcomes, procedures and instruments for assessing processes and learning outcomes is adjusted to indicators of achievement of competence and refers to the Assessment Standards; (11) learning resources can be in the form of books, print and electronic media, the natural surroundings,	Penjasorkes RPP must refer to the curriculum, adapted to the needs and abilities of students, and adapted to school conditions and with specific goals. Teachers must receive special training in making Penjasorkes lesson plans.

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Teachers must be able to modify Penjasorkes for students according to their level of disability	The accuracy of achievement modifies Penjasorkes learning that all teachers have planned but there are still some obstacles	Aspects of modification in Physical Education learning include; 1) use the right language, 2) make a sequence of tasks, 3) availability of sufficient time, 4) rules of the game, 5) learning environment, 6) facilities and equipment, 7) maximum utilization of space	Modifying Penjasorkes lessons made by PJOK teachers referring to guidelines and curriculum development adapted to the needs and abilities of students, as well as adapted to school conditions and with specific goals
Teachers must be able to modify facilities and infrastructure for students	The minimum number of facilities and infrastructure in schools makes students unable/difficult to develop their potential to the fullest and sometimes the implementation of learning has to be done outside of school by renting sports facilities.	Aspects of facilities and infrastructure based on standard facilities and infrastructure include: 1) facilities in the form of tools used for Physical Education, 2) infrastructure in the form of land or buildings for the implementation of Physical Education	Teachers must modify Penjasorkes equipment that is adapted to the type of student's disability

The results of data collection through interviews in the preliminary stage review which evaluates the preparation and activeness of students in participating in learning, the teacher has carried out an assessment so that the goals are in accordance with the curriculum. The purpose of good Penjasorkes learning is to be adjusted to the curriculum and characteristics of students. (Ratih Rapisa et al., 2021).

The teacher has also prepared a semester program, syllabus and lesson plans that are arranged for learning in accordance with the curriculum. It is very important that teachers must have competency expertise in the field of Physical Education and have qualifications as teachers where teachers have professional responsibilities. (Mahendra et al., 2020).

The availability of facilities and infrastructure in Physical Education learning includes the adequacy of infrastructure facilities to support class management in Physical Education learning, regarding mentoring programs in implementing Physical Education learning, the suitability of infrastructure facilities in SLB to carry out learning, and the suitability of infrastructure in SLB to support the learning process. Modification of equipment in sports that is tailored to the needs and abilities of students so that it will make it easier for participants to carry out physical activities. (Wahyu Juanna & Amirulah Rachman, 2019).

The learning strategy which is the teacher's readiness in Physical Education learning includes the use of language that is easily understood by students, the delivery of task sequences that can be accepted and understood by students, the game rules that are modified when learning Physical Education, and the learning environment and equipment that are modified when learning Physical Education are very appropriate. This type of modification in learning varies and varies according to the needs and limitations of students with special needs, but still has the goal of maximizing the learning process. (Afudaniati et al., 2021).

The Penjasorkes learning implementation plan document which is the teacher's readiness in understanding the learning material includes indicators Penjasorkes material delivered by the teacher is in accordance with the curriculum and syllabus, the delivery of material is adjusted to the type of ability of students, in opening learning according to the RPP in an orderly and coherent manner, and opening learning using variations. Coherent delivery and variations in opening learning are needed to overcome student boredom. (Son, 2013).

b. Transactions

The research results for each indicator on the transaction component with research subjects, PJOK teachers are explained as follows;

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DescriptionMatrix		Judgment Matrix	
Intents	Observations	standard	Judgment
<p>PJOK teachers can carry out Penjasorkes learning activities in accordance with the RPP</p>	<p>The accuracy of the achievement of the implementation of Physical Education learning activities, that not all PJOK teachers carry out learning in accordance with the existing RPP.</p> <p>The implementation of Penjasorkes learning is sometimes carried out by combining/joining SDLB and SMPLB classes</p> <p>The time allocation for the implementation of Physical Education learning did not match what was scheduled</p> <p>Not all teachers have good lesson plans, starting from the opening activities, conducting apperception according to the special needs of each student</p> <p>Teachers also experience difficulties in the learning process with thematic approaches.</p>	<p>Implementation of learning activities based on educational process standards, including:</p> <p>Preliminary activities;</p> <p>1) prepare students psychologically and physically to participate in the learning process, 2) provide motivation to learn contextually according to the benefits and application of teaching materials in everyday life, 3) ask questions that relate prior knowledge to the material to be studied, 4) convey the scope materials and explanations of activity descriptions according to the syllabus.</p> <p>Core activities:</p> <p>The use of models, methods, learning media, and learning resources that are adapted to the characteristics of students and subjects is a design to achieve the goal of successful learning. The selection of thematic approaches includes integrated thematic, scientific, inquiry, discovery, learning that produces project-based learning adapted to the characteristics of students and their level of education.</p> <p>Learning must be carried out interactively, inspiring, fun, challenging, motivating students to participate actively and providing sufficient space for initiative, creativity and independence in accordance with the talents, interests, physical and psychological development of students.</p> <p>Closing Activities;</p> <p>1) a whole series of learning activities and the results obtained to further jointly find direct or indirect benefits from the learning outcomes that have taken place; 2) provide feedback on the process and learning outcomes; 3) carry out follow-up activities in the form of assignments, both individual and group assignments; and 4). inform the learning activity plan for the next meeting.</p>	<p>The implementation of Penjasorkes learning in SLB is not fully in accordance with the standards of the special education process.</p> <p>PJOK teachers still need to improve their professionalism through teacher working group activities (KKG), physical education training, and need guidance from school supervisors.</p>

The results of data collection through interviews on the review of the transaction stage in the implementation of learning which includes models, methods, media and closing learning can be described as follows. The Penjasorkes learning model that is often used by teachers is using the commando teaching style in learning, so that students sometimes experience boredom. The model used by teachers in teaching is one of the success of the learning process. The teacher demonstrates skills with verbal instructions about the important cues of movement. (Chatzipanteli & Dean, 2020).

Penjasorkes learning media carried out by teachers include learning that has used media and assistive devices, as well as the use of media adapted to conditions of disability which is still very minimal. Development of learning media modifications can

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be in the form of game models using either tools or programs and learning designs adapted to the character of students, (Dea, 2019). In closing Penjasorkes learning conducted by the teacher includes the teacher at the end or closing the lesson reviewing the subject line of the material that has been given, providing feedback on the learning process, as well as the teacher in giving rewards & punishments (rewards & punishments) in learning.

The shortage of PJOK teachers has an impact on pThe implementation of Physical Education learning is sometimes combined/together between SDLB and SMPLB classes. The time allocation for the implementation of Physical Education learning is not as scheduled so that the learning objectives set are not carried out optimally.

c. Outcomes

The research results for each indicator on the outcomes component with PJOK teacher research subjects are explained as follows;

DescriptionMatrix		Judgment Matrix	
Intents	Observations	standard	Judgment
Teachers carry out learning assessments using tests in authentic assessment, self-assessment, portfolio-based assessment, tests, daily tests, midterm tests, final semester tests, competency level exams, competency level quality exams, national exams	The accuracy of achieving physical education learning assessments is carried out through observations during the learning process, student development books and portfolios, only made by a few teachers, as well as assessment on report cards	Assessment of learning outcomes using Assessment Standards: 1). Objective, meaning that the assessment is based on standards and is not influenced by the subjectivity of the assessor. 2). Integrated, meaning that the assessment by educators is carried out in a planned manner, integrated with learning activities, and is continuous. 3). Economical, means an efficient and effective assessment in its planning, implementation and reporting. 4). Transparent, means that the assessment procedure, assessment criteria, and basis for decision making are accessible to all parties. 5). Accountable, meaning that the assessment can be accounted for internally and externally for technical aspects, procedures and results. 6). Educative, means educating and motivating students and teachers.	Student learning outcomes are assessed objectively. Teachers should use an authentic assessment approach that assesses the readiness of students both from the start, the process and learning outcomes as a whole, by integrating the assessment of attitudes, knowledge and skills as a whole.

The results of the authentic assessment carried out by PJOK teachers in Physical Education learning experience difficulties because there are many aspects that must be assessed including the realm of spiritual and social attitudes, assessing the process of Physical Education learning, as well as in carrying out tests and evaluations with the material that has been given. The teacher conducts an assessment of several aspects of both the written test and the practice so that this assessment activity is more accurate, (Ardisal et al., 2019).

DISCUSSION

Program evaluation is a systematic and subjective assessment of an ongoing or completed object, program or policy, both in terms of implementation design and results, where the purpose of program evaluation is to determine the relevance and achievement of objectives, efficiency, effectiveness, impact and sustainability. where an evaluation must provide reliable and useful information to be able to draw lessons for the decision-making process. A teacher must carry out an evaluation, meaning that a teacher must show progress in designing a learning system and including Physical Education learning. Sukriadi & Arif (2021) explains that basically teachers must prepare lessons well, such as preparing lesson plans before starting, and the teacher must also master the material to be delivered. Teachers must also have competencies that must be possessed when teaching children with special needs, so that learning can be carried out properly.

The teacher's ability to formulate learning objectives is a teacher's ability/mastery which includes the potential, knowledge, and skills possessed by the teacher in the formulation of behavior or abilities that students want to achieve when the learning process is carried out. Through an assessment of each student that refers to the curriculum and characteristics of students will be able to assist in formulating learning objectives. The purpose of physical education includes four aspects, namely (1)

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Physical development, related to the ability to carry out activities that involve the physical strength of several organs of a person's body (physical fitness). (2) Movement development, related to the ability to perform movements effectively, efficiently, smoothly, beautifully, perfectly (skillfully). (3) Mental development, related to the ability to think and interpret the overall knowledge about physical education into the environment. (4) Social development, related to the ability of students to adapt to a group or society (Mustafa, 2020).

The availability of facilities and infrastructure which is the main factor supporting the ongoing learning for children with special needs must be designed and adapted to the characteristics of students. Wahyu Juana and Amirullah Rachman, (2019) explained that modifying sports equipment would greatly facilitate students with special needs in carrying out physical activities.

Physical education for ABK is expected to provide fulfillment of needs and protection for ABK so that they can improve their quality of life. Yuniartik (2017) states that the implementation of physical education learning in schools for children with special needs must be adapted to the abilities of each child and the implementation of physical education learning provided must be systematic, according to the characteristics of the child and managed through effective and efficient physical development towards human formation. completely.

CONCLUSION

Antecedents (preparation) for sports and health physical education learning in SLB throughout Kab. Bantul Yogyakarta has good learning preparation, namely having learning objectives according to the needs of students, having learning tools even though they are not complete, selecting facilities and infrastructure according to the characteristics of students, determining and choosing learning resources/learning media according to the needs of students, and using teaching guidebook to determine learning materials, learning materials are designed according to the needs and characteristics of students.

Transactions (process) Implementation of sports and health physical education learning activities in SLB throughout Kab. Bantul is quite good. This can be seen from the process of applying the model approach, methods and learning media for Physical Education. The drawbacks are still the lack of teachers using teaching aids / learning media during the implementation of learning and the lack of modifying learning tools to suit the material and characteristics of students, the allocation of learning time that is carried out is not in accordance with the learning schedule and tends to finish earlier, and the learning material provided tends to be monotonous, so that it does not meet the educational needs of children with special needs.

Outcomes physical education assessment in SLB throughout Kab. Bantul is done by the teacher is good. The deficiencies in the learning assessment have not fully described the learning implementation plan and the implementation of existing learning activities. The assessment of learning that is carried out tends to be seen from observations during the learning process, it has not been carried out comprehensively (thoroughly) to assess the input, process and output/output, by integrating the assessment of attitudes, knowledge and skills as a whole.

REFERENCES

- 1) Afudaniati, AR, Hidayatullah, MF, & Andayani, TR (2021). Innovation of Adaptive Physical Education in the Teacher's Perspective on Children with Special Needs. *International Journal of Multicultural and Multireligious Understanding*, 8(7), 543. <https://doi.org/10.18415/ijmmu.v8i7.2888>
- 2) Ardisal, A., Sopandi, AA, & Typhoon, J. (2019). Implementation of Adaptive Physical Education Learning for Children with Cerebral Palsy. *Special Needs Education*, 3(2), 39–42.
- 3) Chatzipanteli, A., & Dean, R. (2020). Teaching Styles and the Inclusion of Students with Difficulties in Regular Physical Education: Editor: Ferman Konukman. *Journal of Physical Education, Recreation and Dance*, 91(3), 50–52. <https://doi.org/10.1080/07303084.2019.1705142>
- 4) Dea, AC & R. (2019). Developing Learning Media of Adaptive Sport Course in SLLB Negeri 2 Padang. *Journal of Education Research and Evaluation*, 2(3), 133. <https://doi.org/10.23887/jere.v2i3.15676>
- 5) Farida Noor Isnaini. (2021). The Importance of Physical Education in Improving Literacy and Cognitive Ability for Elementary School Students in the Era of the Industrial Revolution 4.0. *Journal of Syntax Transformation*, Vol. 2 No.
- 6) Febby Pratiwi, Cyntia Novita K., S. (2020). Learning Adaptive Physical Education at Anim-Ha Merauke State Extraordinary Elementary School. *Musamus Journal of Physical Education and Sport*, 03(01 October 2020).
- 7) Mahendra, A., Budiman, D., Stephani, MR, Suntoda, A., Budiana, D., Lubay, LH, Slamet, S., Sumarno, G., Wibowo, R., Putri, W., Anira, A., & Nugroho, WA (2020). Adaptive Physical Education Teachers' Profile in Indonesia: The Opportunity of Improving Adaptive Physical Education Status. *TEGAR: Journal of Teaching Physical Education in Elementary School*, 4(1), 11–18. <https://doi.org/10.17509/tegar.v4i1.28971>
- 8) Mustafa, PS (2020). The Contribution of the Physical Education, Sport and Health Curriculum in Indonesia in Shaping the

Problems of Learning Sports and Health Physical Education in the Special School

Skills of the 21st Century Era. *Journal of Education: Research and Conceptual*, 4(3), 437–452. https://doi.org/10.28926/research_conceptual.v4i3.248

- 9) Nurrohman Jauhari, M., Sambira, & Zakiah, Z. (2020). The Impact of the Covid 19 Pandemic on the Implementation of Adaptive Physical Education in Special Schools. *Journal STAND: Sports and Development*, 1(1), 63–70. <http://jurnal.unipasby.ac.id/index.php/stand/about/submissions>
- 10) Putra, AM (2013). Adaptive Physical Education for Students with Special Needs. *Encyclopedia of School Health*, 178(I CoIE 2018), 44–48. <https://doi.org/10.4135/9781452276250.n180>
- 11) Ratih Rapisia, D., Damastuti, E., & Ananda Putri, A. (2021). Identification of Children with Special Needs in Inclusive Schools. *Journal of ICSAR ISSN*, 5(2), 15–20.
- 12) Sepdanius, E. (2019). *Sports Tests and Measurements*. Rajagrafindo Persada.
- 13) Sukadari. (2020). Services for Children with Special Needs (ABK) Through Inclusive Education. *Elementary School*, 7.
- 14) Wahyu Juanna, M., & Amirulah Rachman, H. (2019). Students' Participation in Physical Education Learning Through Modification of Equipment. 278(YISHPESS), 94–95. <https://doi.org/10.2991/yishpess-cois-18.2018.23>



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The Screen Institution and Child's Models in Nollywood Fictional Reality Films: An Example of *Two Rabbits*



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ABSTRACT: Child education in Nigeria and most parts of Africa has become a serious subject matter in recent times due to some nonchalant and maladjusted behaviours witnessed in today's kids and younger adults alike. However, in Nollywood today, the themes of hatred, deceit, gluttony, stealing, and other social vices are prevalent in some children films. This research is centred on finding out the reasons for such increase in dubious behaviours amongst the children and thus adopts content analysis approach of qualitative research method to evaluate a Nollywood fictional-reality film *Two Rabbits* selected purposively to see the level of imitation of the filmic events on the part of the children, and how such films influence the young audiences into modelling their behaviours and attitudes around the film characters. The study is hinged on the Screen Institution postulation that highlights the powerful nature of screen interface learning which could be positive or negative. The researcher discovered that children could be easily influenced by the child star actors (Chinedu Ikedieze and Osita IHEME) who have starred in most Nollywood films. And as such modelling their lives, attitudes and behaviours around that of the characters' they see often in films becomes inevitable. The study concludes and recommends that Nollywood children film characters should be equipped with good characters' traits and activities that project love, handiwork, courage, and bravery instead of the constant projection of the social vices as perceived in *Two Rabbits* and other Nollywood children films. And for a character who embodies these social vices, adequate punishment should be served so as to deter the young audiences from imitating such a character.

KEYWORDS: Screen Institution Postulation, Nollywood, Children, Fictional Reality.

INTRODUCTION

Fantasy and reality are wonderful apparatus in child's development, fantasy here stands for emotional stimulation as well as imaginative examination of the young audience. Fictional Reality could be seen as the state of things as they actually are or exist, as opposed to emotional, fictional, an idealistic or imaginary idea of them. Merriam-Webster defines reality as "The quality of being real" (n.p). In this study, fictional reality refers to film environment that is recognizable by the audience, it could be a city, a building, an event, festival, culture, or principles that people of a particular cultural enclave practice that are portrayed in films and the audiences know about those events or norms. Fictions are considered not real, yet most films are imaginative work of fictions and most children, from observations have shown through their behaviours and attitudes that what they see in films are more or less real, hence they practise such in their daily living. What children consider real events, this study see as a fictional-event hence the medium of its presentation is film which can present fantasy or fictional-reality environments. Thus, fictional reality in films could be seen as the reflection of the true events or happenings in the society. Any attempt to project the images of what is not obtainable in the audience (Children) immediate environment, or present "negative" abstract reality could redirect the societal norms and nuances in the growing minds of the society's future. (Children) In film environment, fantasies are usually exaggerated to create large than life impression on the audience while one could argue that what is obtainable in regards to reality in film is a suggestive realism hence most of the filmic events are pre-recorded in the studio or on the actual locations. Films events recorded in actual locations could be seen as more real when compared with the ones recorded in the studio. An adult experiences film mostly as a fantasy/fictional reality and not as a reality, and he/she can generally say whether the film content is a representation of real events or simply fantasy as the case may be. Children's film experience differs in both respects. Fantasy and reality often coincide and the film contents are largely seen as a reproduction of reality. According to Keilhacker, Martin:

Three forms of reality experienced by the child can be distinguished: (1) Small children aged 6-7 years often take film images for objective reality; only later do they make a difference between objective reality and the filmic image. (2) A form of reality is experienced in active participation in the film action. (3) The third form consists of emotional participation in the action, and with

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the film "hero". In pre-puberty, the children may believe in the genuineness of the film action, even if it is represented by trick photography. (43)

However, the level of make-believe inherent in film events (Which could come from actors' good portrayals of characters, set, props, costumes, and make up, etcetera etcetera) could increase the audience level of fantasies and places his emotions on the pedestal of illusion of reality which is devoid of any rational thinking within the stipulated time of the film screening in the theatre or at home. From the experiment the researcher carried out which forms the theoretical foundation of this study, it was observed that while the screening of fantastic content of the experimented films was going on, most of the participants who were so engrossed in the renditions of the filmic events began to fantasize, but the screening of fictional reality films presented the participants with the real world situations, some of the participants were even reading the film's happenings, predicting the events which they thought would follow the previous ones because they were conversant with the filmic environment which fictional reality content presents.

THEORETICAL FRAMEWORK

The age range for the participants in the study group is 7 – 13 years of age. This selection falls within the age range of what Jean Piaget called "Concrete Operational Thought" here, children begin to develop clearer methods of thinking and start to overcome the egocentrism of the preoperational stage. They demonstrate logical, concrete reasoning and realise that their own thoughts and feelings are unique and may not be shared by others. Fantasy and reality arts may be in the form of literature or film. Thus, these genres appeal differently to children of different ages. Hence, interrogating the influence of Nollywood on Nigerian children may highlight what children are and how film affects them socially, emotionally, physically and otherwise since they form an integral part of the society. Consequently, theories that focus on aspects such as physical, emotional and moral development have been developed. This aspect of the effect of film content on a developing child is supported by Albert Bandura's Observation, Learning and Imitation Behaviour Theory. The process is similar to that, when children imitate the behaviour of adults around them. Bandura's studies in the 1960's provided evidence that modelled behaviour (aggression) is spontaneously imitated by children or adolescents. According to Bandura "the best and more effective way to teach children new ways of acting is to show them the behaviour you want them to display." (10) Cultivation theory which also contributed immensely in birthing Screen Institution Postulation is an approach developed by George Gerbner. Cultivation theorists such as George Gerbner and Larry Gross believe that television can create and maintain a very basic set of beliefs about the world and that these influences are cumulative and long-lived ones. This indicates that the world view of the person who watches violence on the television does not change immediately, it is cumulative. Some of the critics of cultivation theory are of the opinion that it has limitations which are its concentrations on television only social constructive effects. Others talked about mainstreaming, that is the more time a person spends watching TV, the more he or she will adopt the predominant outlook of the world that is expressed on the medium. Chinyere Okunna opines that "Every receiver of a television message does four things to the content, receive it or not, respond to it or not, accept it and behave according to its demand or not" (204). Okunna, of course may be talking about adult audiences who can use a variety of defensive mechanisms or strategies to shield themselves from harmful media messages, which are contradictory to their attitudes, principles and values. One could deduce that the above theories are centred on the television viewership. The question that one may likely ask is 'what about the children, the young audience who in today's world have access to a plethora of screen interfaces, such as phones, computer, tablet phones, smartphones, television, films, and are equally defenceless to the content of the aforementioned gadgets?

There are three major institutions designed to train a child in Nigeria. These institutions are Family, School and Religion. Conversely, these institutions are making concerted efforts to ensure the proper upbringing of children in society. However, the family institution one may argue in recent time is no longer living up to its expectations, as most parents find it difficult to devote adequate time to take care of their children and train them properly, some schools in Nigeria are ill-equipped to train children in the 21st century, the lack of adequate facilities and technical know-how are belittling the efforts of most teachers in some of the schools. On the other hand, most religious organisations in Nigeria preach wealth, successes, riches and financial breakthroughs to the detriment of moral rectitude and decency. In most churches today in Nigeria most young adults go to the worship centres to take 'selfies' pictures, some are glued to their smartphones' screens from the beginning of the service to the closing of the service. In place of a child's education and upbringing, the aforementioned institutions are struggling to maintain their relevance in today's world when it comes to child nurturing. Consequently, the researcher discovers another institution where the activities of the above institutions are assimilated and dispensed. The **Screen Institution postulation** is the conglomeration of the screen interface's contents that children and young adults can access and use. The Screen institution postulation includes, but is not restricted to films, games (Screen games), cameras, smartphones, laptops, social media, YouTube channel, Netflix, online streaming platforms, among others. Also included is all information and learning that can be acquired through the screen interface.

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(Positive or negative information or learning as the case may be) Today’s children learn from all these platforms and in most cases, no one is saddled with the responsibilities of guarding, directing and explaining to the child learner the subtext lessons inherent in the contents of the above-mentioned platforms. What the child sees often on the screen is what he imbibes and assimilates, gradually, this turns out to shape his understanding and the ideological constructs of his immediate environment. In Nigeria today, one may argue that most children have embraced the screen “teacher” who is closer to their immediate needs and aspirations. These needs and aspirations may be positive or negative, thus, it became imperative that the contents of this fourth institution of learning be galvanised, sieved, dissected and censored to promote and project a positive learning environment for children. This study therefore, focuses on the screen institution of Nollywood films and as such, adopts Aniukwu’s Screen Institution Postulation to evaluate the fictional-reality film environment and child’s modelling behaviour that may occur after watching such film content. Screen Institution postulation summarises that what a child sees often on the screen through fictional-reality content is what he or she imbibes and assimilates, gradually, this turns out to shape his/her understanding and the ideological constructs of his immediate environment which could be positive or negative. This postulation was tested through a pre-test and post-test evaluation where fictional-reality films (*My Kids and I* and *Two Rabbits*) and Fantasy films (*Harry Potter: The Sorcerer’s Stone* and *Magic Bible*) were screened before a focus group of thirty participants (Age ranges 7-13). The results of the post-test suggest that opinion could be formed or existing one changed after viewing particular content on the screen. Consequently, the researcher espouses the content analysis approach of the qualitative research method in evaluating *Two Rabbits*.

Synopsis of *Two Rabbits*

Title	<i>Two Rabbits (2014)</i>
Genre	Comedy/family/ Fictional reality
Setting	Contemporary Nigerian Community (Rural)
Language	Pidgin English/English Language
Running Time	160 minutes
Top billed actors	Nkem Owoh, Chinedu Ikedieze, Osita IHEME, Chizzy Alich.
writer	Chiemelie Mishack Nwonu
Producer	Chiemelie Mishack Nwonu
Director	Amayo Uzo Philip
Source	YouTube (Online platform)

The film *Two Rabbits* presents a single father and his two children struggling to survive each other’s misdemeanours. The father whose name in the film is Sargent Wilberforce wants to marry a young lady named Lara but his two boys Ojongo and Karama become the obstacle between Lara and Sargent in realizing their hearts desires. The boys (Chinedu Ikedieze and Osita IHEME) are thorns on their father’s flesh, committing all sorts of crimes, ranging from stealing their father’s money, to being rude to their elders, harassing the villagers and being “kind” to other children in their community. Sargent uses his acquired military tactics on his boys, drilling them as young recruits in the military. He has no time to listen to his children to know exactly what they want in life. The young lads see that no one gives them attention fashion out means of dealing mercilessly with people who cross their path. They formulate a kidnapping mantra in which they use in threatening their father and his girlfriend. Each time they want to get rid of them, they would shout “kidnappers are coming” and their father and Lara would run into hiding for days until the unpleasant atmosphere created by the children cools off. It comes to a point that Sargent is fed up and he decides to end it all by shooting his sons whom he had disowned previously. This action did not end up well with him as the Nigerian police arrested the boys before he could reach them.

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Screen Institution postulation comes into play in analysing the impact *Two Rabbits* may have on child’s star modelling behaviour. Children and adolescents or even most adults who see films prefer a particular film (s) due to the presence of some actors borne out of their psychological and emotional affiliations to such actors/actresses who may have in one way or the other impressed them through their looks, voices or character portrayal. Thus, Star worship as a psychological tendency which helps an individual to choose film actors and actresses as his or her heroes and heroines on whom they model their behaviours becomes inevitable in children’s lives. In analysing the film *Two Rabbits*, a searchlight is beamed on the character portrayals of two most prominent children-actors in Nollywood Film Industry (Osita IHEME and Chinedu Ikedieze) from the interview conducted by the researcher, greater percentage of children identified Aki and Pawpaw as children characters they are familiar with while few of

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them (Especially girls) identified Regina Daniel as their role model, yet acknowledging their familiarity with Aki and Pawpaw as they are popularly called. The greater percentage is able to identify Chinedu Ihedieze and Osita IHEME because the two have featured in more films than any other children actors (More than two hundred films titles are credited to their names) and also because of their body sizes, one could say without any shade of doubt that they are children.

From the foregoing, one could say that film models known to most Nigerian children are Chinedu and Osita. (Aki na Pawpaw) A look at their characters' portrayals in *Two Rabbits* may give one the insight of what a child who sees the film is likely to model his life on. In evaluating the data generated from *Two Rabbits*, the unit of analysis focuses on two types of themes which are semantic and latent. With semantic approach, the themes of the movies are identified within the explicit or surface meanings of the data while the latent content of the data identifies or examines the underlying meanings and ideas behind text or speech that is being analysed.

PLATE1



WILBERFORCE AND HIS TWO SONS (KARAMA AND OJONGO)

The overriding theme of deceit, played alongside falsehoods, larceny, hatred, renunciation, inordinate quest for wealth, immorality and greed form the central focus of *Two Rabbits*. The film presents two children Ojongo and Karama (Osita IHEME and Chinedu Ihedieze) who feel that their father (Nkem Owo) is not being fair to them on his quest to marry Lara (Alichi Chizzy). A lady, the children hate without any known reason in the world of the film. The sequence opens as Wilberforce, in anger, drags his kids' ears.

Wilberforce: How many times have I warned you boys not to take me for granted, you think I attend the rank of sergeant just like that? Now, I want to ask you again, who took the meat in my dish? (No answer from the children except murmurs) You know what is wrong with you, it is because you have not experience the wrath of my military training which I am going to give you now. (Commands them) On the ground, jump like "Nwa Awo" toads. (The children run away)The exposition above presented a troubled family where the kids steal from their father, and also, where the father sees no difference between his children and the newly recruits in the barracks. Wilberforce like most African parents believe that through harsh punishment he could get the best out of his children but as could be seen in the subsequent happenings in the film, such punishment makes the children sturdier because over time, they become used to the punishment. And this is where the problem lies when it comes to imitation of bad characters. Hyperactive children would easily imbibe such behaviours believing that what come may, the punishment is not going to 'kill' them, or better still they would run away from such punishment as witnessed in the film, Ojongo and Karama run away from their father's punishment and the retired sergeant has no strength to go after them. **Translation:** The children could always escape justice after committing crimes. Wilberforce contemplates on the issue at hand as Lara arrives to know his arrangement concerning their intended marriage.

Lara: You said you love me, so why the delay, when are you coming to see my parents?

Wilberforce: We have a problem

Lara: My sergeant, what is the problem?

Wilberforce: My children, the so-called children of mine, those hobos, those urchins that a woman came here and laid like eggs into my compound. Those boys I am not even sure are my kids. Do you know those boys are the cock on the wheel of our progress? They want to damage this (Our) relationship, but it won't work.

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The above Wilberforce line establishes his unhealthy relationship with his sons, a soured rapport as he subsequently disowns them and starts to hunt them down. The children trying to make up with their father go to Etim, their Father's friend to help them beg their father to accept them back.

Etim: What did you do when your father, Sergeant Wilberforce, wanted to kill you with military punishment?

Ojongo: He said we stole meat from the pot.

Etim: What? That's a very powerful allegation, guilty or not guilty?

Karama: Oga Etim, we never pass to steal ordinary meat for soup pot. We don't pass that one na (Sir Etim, have we not come of age to go and steal ordinary meat from a pot of soup. We have grown above that)

Etim: You are responsible for your crime. You go pay me begging allowance (You are going to pay me for begging your father)

Ojongo: We don't get money na, how we go get money we go use pay you. Do this thing for us na. (We don't have money, how are we going to make money to pay you? Please do this for us)

Karama's position questions the boys' remorsefulness, they believe that stealing meat from a pot of soup is "ordinary" and it is not a serious subject matter, in other words, the boys are looking forward to committing misdemeanour that would suit their personalities. Etim sounds a note of warning to them that they have to take responsibility for their crime but instead of helping the kids out rightly, he demands for 'begging allowance' from the unemployed children. He helps the children make peace with their father without knowing that he has sowed a seed of stealing in the kids as was later revealed in the film. Conditions involving the phenomenon of film-star worship in children surround adults' opinions of the stars. And Etim as an adult has given some credits to the boys' action by letting them know that if one commits a crime regardless of his or her age, and employment status, he or she should have money to pay a mediator. The audience looks on to see how Ojongo and Karama handle recurrence situations in their lives.

PLATE2



ETIM GOES TO WILBERFORCE'S HOUSE TO INTERCEDE ON BEHALF OF KARAMA AND OJONGO

Karama and Ojongo make peace with their father after signing an agreement not to disobey him again, Wilberforce welcomes his children wholeheartedly without knowing that the children have a hidden agenda. Wilberforce goes to Lara's house and they are inside the room. Ojongo and Karama knock on the door furiously and leave immediately. Wilberforce and his partner are surprised as neither of them is expecting any visitor. Wilberforce out of fear of the unknown, sneaks out of Lara's house, on getting to his house he meets his sons.

Wilberforce: Your father is in danger, help me to plan your father's safety.

Ojongo: Papa, some people came here looking for you.

Karama: (To Ojongo) Thank you, they said they are kidnappers.

Wilberforce: (Quietly) Kidnappers, looking for me? You know what is going to happen, If anybody comes to look for me here, tell them your father is on AWOL

Ojongo: On AWOL?

Wilberforce: Yes, just tell them that.

Karama: Papa, that's a lie, any lie is ten thousand.

Wilberforce: I am not telling you lies; what I am feeding you is creativity. You want your father to die?

Ojongo: Okay, on AWOL, ten thousand.

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Okay, I will pay you. If Lara comes here, tell her to meet me at that forest in the backyard. Don't tell any other person my whereabouts.

The two actors exhibited their characters very well in the above scene, deceiving Wilberforce, and inadvertently forcing him to abandon his home to live in the bush. With genuine character portrayal through action and line delivering of Chinedu and Osita in the above sequence, children's imitation of the actors may become automatic and there may be an increasing trend of conformity, which in no distant time results in conscious imitation of the actors' lifestyle. The actors are clever in their dealings with people and most children always want to be seen as clever individuals. It would have been a wonderful imitation had the actors' actions depicted justice, helpfulness and goodness of heart of the characters. As the above elements are idealized and dominate the young people's fantasies. Wilberforce telling lies to his children and ascribing 'creativity' to his lies demonstrates the level of dishonest personalities of some parents in Nigerian society. It's common these days for a father or a mother to instruct his or her child to tell expected visitors that he/she is not at home. (In some cases parents want to have some rest and wouldn't want to be disturbed) children unconsciously learn to tell lies and see nothing wrong in doing so hence, their "model" is comfortable with it. These models whom the researcher sees as teachers in the shadows succeed in sending their father away now strategize on how to put a permanent stop to Wilberforce and Lara's relationship, they steal their father's money as Ojongo fumes in anger.

Ojongo: He won't see the money to go and marry that girl

The audience sees children who take laws into their hands, stealing their father's savings and not knowing that they are also stealing their future, of course that is part of the reason they are children. Discovering this nefarious act, Wilberforce laments to Lara:

Wilberforce: All the money I made in business... All the money I have in this world is inside that bag you see those boys carrying.

PLATE3



KARAMA AND OJONGO SHARE BREAD BOUGHT WITH STOLEN MONEY TO OTHER CHILDREN

Karama and Ojongo, knowing that their father is searching for them, seek refuge once more from Etim who welcomes them.

Etim: What have you done this time?

Ojongo: Our papa sent us.

Karama: (Giving him a bundle of naira notes) He said we should give you this money, so you can add it to your business.

Etim: How? Is your father a philanthropist?

Akpan: (Etim's Roommate) We should go and thank him.

Ojongo: Noooo! He said you should not bother yourself.

The boys did not stop at giving out their father's money to the public; they gathered their fellow kids under a tree and distributed bread and money to them. And the children sing their praises. Wilberforce hearing that his sons are now 'philanthropists' goes out in search of them, he is able to catch them but with help from Etim and Akpan, the boys escape. In another scene, Ojongo and Karama run to Etim and Akpan again, this time asking them how much to pay them so as to live with them since Wilberforce is after their lives.

Ojongo: We want you to hide us in your house.

Karama: We are going to pay you; how much are you going to take (After some deliberation)

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Etim: Two Thousand.

Ojongo: Only two thousand, small money. We are going to pay you twenty thousand.

PLATE4



ETIM COUNTS THE MONEY HE RECEIVES FROM KARAMA AND OJONGO

The boys give them the money and the case is settled. The underlying meaning of the above characters' actions calls for a serious examination of children script in Nollywood and the meanings inherent in the actions of the child-actors. The notion that there are always two sides of a coin (Where one side is good and the other one is bad) is defeated in the above lines. The reverse side of the coin is not encouraging for imitation from an adult perspective, likewise the reverse of the coin. Karama and Ojongo are birds of the same feather that flock together thereby delimiting the imitation of any positive output from any of them. The adults in the movie, Etim, Lara, Wilberforce and Akpan in one way or the other influenced the kids negatively and thus giving credence to their actions as could be seen in their dealings with Etim whom they trust as their father's friend and believe he would be of help to them in times of needs. Yes, Etim provided that help but without following the proper channel of investigation. Examples could be found in some of the scenes with Etim, (1) The boys asking for his help to beg Wilberforce on their behalf, He demanded "Begging Allowance" thereby sowing the seed of stealing in them. (2) The boys gave him money and he did not verify the source of the money. He believes them without carrying out thorough investigation into their activities. The above actions become a yardstick to kids who lack parental love and care, or whose parent (s) wants to marry a wife or a husband as the case may be. They are to render such parents incapacitated in all possible ways and make sure the marriage never succeeds as witnessed in the characters of Ojongo and Karama. The positive aspects of such marriage to the kids are not highlighted in the movie. Commensurate punishment that Ojongo and Karama deserved for their atrocious outings are soft-peddled in the end of the film. It is expected that as a result of film screening that some hyperactive or maladjusted children would abandon their originally negative point of view, hence pupils appeared to be capable of correctly understanding the relationship between parents and children as represented by film contents but that was not the case in the above film. At the end of the film screening most of the children laughed, showing that they enjoyed the actions, their emotions were not purged, and they were not remorseful just like the characters they have seen in the movie. One could say that the above observation makes imitation and star-worshipping inevitable in the later part of a child's life. Writing on "New gods: Problems of film-star worship" Zochbauer Franz opines that: 70 percent of young persons between the ages of 10 and 18 model their manners and attitudes on those of the stars; the film-star furnishes standards of economic behaviour (32).

Zochbauer's observation is apt to the ongoing argument, it is also important to add that it goes beyond influencing the child's economic behaviour, but cuts across virtually every aspect of the child's life. The researcher ponders that star worship of screen models/actors among children is all the more significant since the influence of parents, pastors, teachers and masters on children is waning in recent time due to the presence of a plethora of screen interfaces.

CONCLUSION

Two Rabbits, a fictional reality film provided the children with the environment that they are familiar with, so mere looking at the filmic events they understood the sequences of actions, they knew about the characters' names and behaviours, as such the film did not challenge their imaginations or engage them mentally like the two fantasy-reality films did during the film screening, this

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position makes imitation inevitable. As such *Two Rabbits* would have more negative impacts on children's behaviours, attitudes and temperaments if no one is saddled with the responsibility of teaching the child audience the latent meanings of the filmic events. The analysis above reveals that children's film content presented in the real world environment (Fictional Reality) of a child audience are capable of making or destroying a child's attitudinal behaviour. Most children film that featured the two actors in the *Two Rabbits*, often interrogate themes/subthemes of witchcraft, theft, Friendship, Bravery, Courage, stubbornness, spiritual and demonic powers, mischief, Gluttony, disobedience, obedience, hatred, and so on and so forth. While screening Nollywood movies used in the experiment the researcher conducted, the study group identified the characters Chinedu Ikedieze and Osita Itheme (The two actors in *Two Rabbits*) in the movies as they have seen them in other movies portraying almost the same characteristics. The impact of the aforementioned actors on children's ideological leaning cannot be overemphasized as a good number of school children see them and their appalling behaviours in most Nollywood films. Data gathered after the discussion group exercise proved the above point. From the above answers, it's poignant to state categorically that a greater percentage of African and Nigerian children are visual learners and they also see and enjoy Nollywood films, as such, imitation of characters' behaviour is not out of place. The above observation stems from the fact that most Nigerian film narratives are drama 'on screen' that deals with the reality of human conduct and the society, children no doubt like drama as the researcher witnessed in the cause of this study. According to Festus Idoko and Hanatu Dantong, Drama in Education uses:

Dramatic elements of movement, voice, concentration, improvisation and role-play aid the personal development of the pupil... At the same time the use of DIE equips the child with a wide range of interpersonal skill in communication, relationships etc (134) Drama most often forms part of the film narratives, and the film narratives incorporate all the above mentioned elements and this in turn, becomes the actions and activities of the people of a society that a child learns from through the projected activities and images on the screen. film encourages the development of individual personal resources-sensory perception, intellect, imagination, powers of concentration, and children by practising what they see in such films at home or at school develop physical and verbal skills and emotional control. The above actions are reliant on the messages, themes, and overriding metaphor of the film's contents projected to a child. According to Gordon Vallins as quoted by Festus and Hanatu, opines that:

By participating in dramatic activities we not only realize our own individuality and express our own thoughts, ideas, feelings, needs, and demands, but we also brought into immediate contact with others who are also expressing these aspects of self. We are forced to take these 'others' into account and in doing so we acquire a sense of personal and social integrity and hopefully achieve a balance between the two. (137)

Going further, Vallins is of the opinion that play plunges the young child into the exploration of things, through touching, tasting, smelling, looking, listening and manipulating. Vallins position is evident during the practical experiment carried out by the researcher in another study especially during the screening of *Two Rabbits*, the pupils were seen carrying out the above activities as mentioned by Vallins. In watching films, children begin to learn their future roles in the society, unfortunately most of the Nollywood children films do not provide children with brighter future roles as witnessed in some of the films that portrayed the two major actors in *Two Rabbits*. In essence, the film narratives should provide children with emotional, physical, spiritual growth, intellectual, and educational development, as well as social and behavioural skills.

REFERENCES

- 1) Aniuoku, Nkemakonam. *Between Fantasy and Reality: Analysing the Impact of Selected Films on Children in Awka, Nigeria*. A PhD dissertation. Nnamdi Azikiwe University, Awka, Anambra State Nigeria. 2019
- 2) Bandura, Albert. www.bandurasociallearningtheory.com. 12 March 2010. General Learning Press. PDF. 25 May 2022.
- 3) Bandura, Albert. 'Influence of Models' Reinforcement Contingencies on the Acquisition of Imitative Responses. *J Pers Soc Psychol*. 1965;1(6):589-595
- 4) Gerbner, George. And Larry Gross. "Living with Television: The Violence Profile" *Journal of Communication* June. 1976 DOI: 10.1111/j.1460-2466.1976.tb01397.172-199. PDF. 30 June 2022.
- 5) Idoko, Festus and Hanatu Dantong. "Child's Rights and Drama: Growing Children Through Literary Plays." *Nigerian Theatre Journal* 11.1 (2011): 133 - 144. Document
- 6) Keilhacker, Martin. *The character of reality in the film experience of children and adolescents*.
- 7) Reports and Papers on Mass Communication. The influence of the cinema on children and adolescents. Paris: Department of Communication, UNESCO, 1961. Online (PDF). 10 July 2018
- 8) Okunna, Stella. *Teaching Mass communication: A Multi-Dimensional Approach*. Enugu: New Generation Books, 2002
- 9) Piaget, Jean. *The Origin of Intelligence in Children*. New York: International University Press, 1972. PDF
- 10) Thesaurus, Cambridge Advanced Learner's Dictionary &. <http://www.fantasymerriamwebster/googlesearch.com>. 28 January 2008. Cambridge University Press. web page. 20 March 2017.

The Screen Institution and Child's Models in Nollywood Fictional Reality Films: An Example of Two Rabbits

<<https://dictionary.cambridge.org/dictionary/english/>>.

- 11) *Two Rabbits*. Dir. Amayo Philips Uzo. Perf. Osita Itheme, Nkem Owoh, Chinedu Ikedieze. De-Blessed Mishack Nwonu Production. 2014. YouTube. 10 June 2022
- 12) Villani, Susan. "Impact of Media on Children and Adolescents: A 10-Year Review of the Research." *Journal of American Academy of Child and Adolescent Psychiatry*, 40.4 (2001): 392-401. PDF. 30 July 2019.
<<http://www.mediaimpactsusanv.... googlescholar.com>>.
- 13) Zochbauer, Franz. *New gods. Problems of film-star worship. In: Jugend und Film, Munich*. The influence of the cinema on children and adolescents. UNESCO. Paris: UNESCO, 1961. Online (PDF). 21 October 2022



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Human Fossils from the First Quarter of the 21st Century



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ABSTRACT: Significant discoveries have been made from the first quarter of this Century in the field of evolutionary biology to redefine the human evolution. Discoveries present the morphological variability in fossil forms and indicate the valuable role of that particular continent in tracing the human origin. This article presents a general review of the human fossils found so far of this century that force us to rethink about the current concept of human origin. Most of the fossils have been found in East Africa, South Africa, Central Africa, Russia, Israel and Indonesia. Some of these are related to *Australopithecus afarensis*, some to *Aus. africanus* while some to Neanderthal. A complete human skeleton remains has been found from Ethiopia (Middle Awash region) and named as *Ardipithecus ramidus* is believed to be the common ancestor of humans and chimpanzees. Naser *Ramla* from Israel is considered as an ancestor of Neanderthals because it used stone tool production technology to make tools. Some fossils share features of both *Australopithecus* and early *Homo*, such as *Orrorin tugenensis* and *Homo naledi*. *Australopithecus deyremeda* is considered as an extinct species of *Australopithecine*. Some of these are contemporary of modern humans, such as *Homo floresiensis*, whose complete skeleton has been found from the Flores island of Indonesia and it has also been considered as an Asian descendant of *Homo erectus*. Denisovans found in Russia's Denisova cave is considered as a new species, it belongs to the Lower Middle Palaeolithic period, so it is also considered to be related to Neanderthal, although its fossil remains include only digit bone, 4 tooth, parts of jaw and long bones and parietal part of the cranium.

KEYWORDS: Human fossils, Evolution, Discoveries, New species.

KENYANTHROPUS PLATYOPS

Kenyanthropus platyops was accepted as a new species in 2001; although this acceptance is disputed because in 2003 scientist Tim White discovered that the skull of *Kenyanthropus platyops* is similar in many ways to *Australopithecus afarensis*. Fossils of *Kenyanthropus platyops* are 3.5 to 3.2 million years old which were discovered in 1999 and 2001 by the Justus Ares and Maeve Leakey team from Lake Turkana, Kenya. *Kenyanthropus platyops* means 'flat face', which is a characteristic of humans, on the basis of which it has been considered as a connecting link between humans and apes. Leakey said that this fossil represents a new hominin genus. While other scientists considered it a species of *Australopithecus* and till now many scientists consider it under *Australopithecus afarensis*. In fossil remains of this species 30 skulls and teeth have been found at the site, its skull is the oldest among the skulls discovered so far. The bone of the big toe suggests that it could walk upright. The shape of the teeth is intermediate between that of apes and humans. No definite proof has been found related to their culture. Scientists speculate that its culture would be similar to that of its contemporary *Australopithecus afarensis*. No evidence of tools or stone tools has been found. Because it is contemporary with *Australopithecus afarensis* so scientists speculate that this species would probably have lived in small groups of men and women like *Australopithecus afarensis* and would have lived in an environment where there would be grasslands and forests and probably used available plants as food. But there is no evidence of the type of plants available.

ORRORIN TUGENENSIS

In 2001, a new human ancestor, *Orrorin tugenensis*, was discovered. This fossil is estimated to be about 6 million years old. Its position in the human family tree is considered to be at the line that separates from chimpanzees and goes towards humans. Some bone of limbs, parts of jaw bone and some teeth have been found in its fossils remains. In 2002 fossils of 5 individuals related to it were found in Kenya and this expedition was run under the leadership of Martin Pickford (Kenya Palaeontology Expedition) and Brigitte Senut (The Museum of Natural History, Paris). The genus name *Orrorin* means 'Original Man' in the Tugen language, while the species name *tugenensis* was given because its remains were found on Tugen Hill of Kenya. The places where *Orrorin's* remains have been found in Tugen Hills, Kenya are Cheboit, Kapsomin, Kapcheberek, and Aragai. *Orrorin* is thought to be more similar to modern man (*Homo sapiens*) than to *Australopithecus afarensis* ("Lucy"). This similarity is based on the morphological

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similarity of the femur bone. Its culture has been estimated based on the remains found, it may have used unmodified simple tools and plant twigs to obtain food, like modern chimpanzees. On the basis of large and flat molar teeth, it is estimated that its food must have been fruits, vegetables and meat. On the basis of the humerus bone and the bent finger bone, its adaptations for climbing trees can be inferred. The structure of the teeth is primitive and the size is small while the enamel is thick, although the canine teeth are larger and sharper than those of humans.

ARDIPITHECUS KADABBA

Ardipithecus kadabba was recognized as a new human species in 2001. Its remains were found in Ethiopia between 1997 and 2000. On the basis of the remains, it is estimated that it used to walk with two legs. However, on the basis of the size of the body and brain, it was similar to the modern chimpanzee. Its canine teeth are similar to those of later hominins. Some post cranial bones and sets of teeth have been found in its remains. The big and strong bone of the big toe confirms its bipedalism. Scientist Yohannes Haile-Selassie found a fragment of the jaw of this species in the Central Awash Region of Ethiopia in 1997, later found 11 more remains belonging to 5 individuals, from which he concluded that he had discovered an early human ancestor. Arm bones, hand and foot bones and a clavicle bone were also found in other specimens. These evidences have been considered to be 5.8-5.2 million years old. In 2002, 6 teeth were also found from the middle awash region, on the basis of which Asa Koma told that these evidences are unique. Based on the evidence of these teeth, in 2004 Yohannes Haile-Selassie, Gen Suwa, and Tim White called it a new species and named it *Ardipithecus kadabba*. In Afar language kadabba means 'oldest ancestor'. Kadabba's back teeth are large in size, so it is estimated that it must have eaten fibrous foods. Apart from this, on the basis of fauna found from the Fossils site, it was inferred that in kadabba lived in a mixed environment of grasslands and forests.

SAHELANTHROPUS TCHADENSIS

Sahelanthropus tchadensis was discovered in 2001 by Michel Brunet and his research team from the Toros-Menalla site of the Djurab Desert in northern Chad. Fractured postcranial material has been found in its specimens, on the basis of which it has been inferred that some of its symptoms are similar to humans and some to apes. Its age has been estimated to be 6-7 million years ago. It is related to chimpanzees and considered an ancestor of humans because it comes before the division of chimpanzee and human lineage. Its physical features include strong skull, chimpanzee like brain and muscles attachment like ape. On the basis of fragmentary postcranial material, some scientists believe that its foramen magnum was anteriorly oriented, therefore its posture was erect and the locomotion was bipedal. Pronounced brow ridges also show its resemblance to early humans. The orthognathus face and the absence of the honing complex in the jaws shows its similarity to early hominins, although pronounced posterior neck muscle attachments confirm that it was a quadruped. Thus some scientists believe that *S. tchadensis* may have been an early member of the evolutionary tree of humans.

HOMO FLORESIENSIS

Homo floresiensis was discovered as a new species in 2004 from the Indonesian island of Flores. On the basis of fossil remains, it has been considered a dwarf human species. These fossils are 1200 to 100,000 years old; on that basis it has been considered contemporary of modern man. This species has been considered a descendant of the Asian *Homo erectus*. Partial skeletons of 9 individual and a complete skull have been found in the remains, which have been named 'LB1'. LB1 is a nearly complete, small sized skeleton with skull which is of a 30-year-old female, hence the nicknamed "Little Lady of Flores" or "Flo" or "Hobbit". It was named and classified by Peter Brown et al in 2004. In 2017, based on phylogenetic analysis, it was concluded that *H. floresiensis* is an early human and a sister species of *Homo habilis*. Its remains were first discovered in 2003 by a joint team of Australian-Indonesian archaeologists from the Liang Bua cave in the Indonesian island of Flores and named as LB1. A tooth has also been discovered of this species which is believed to be LB2 species. An arm bone has also been found which has been named LB3. It has been called *H. floresiensis*. This specimen is about 74,000 years old. This individual was 3 feet 6 inches tall. It had a small brain, large teeth, lack of chin, receding foreheads and sloping forward shoulders. It may have used stone tools and fire. A large number of bone fragments of *Stegodon* (an extinct species of elephant) have been found along with the remains of this species, so it is believed that it may have hunted *Stegodon*.

ARDIPITHICUS RAMIDUS

Fossils of *Ardipithecus ramidus* were discovered from Ethiopia in 2009 and it is considered a new species. Almost a complete skeleton has been found in its remains, which was given the nickname 'Ardi'. The remains found are of a 50 kg woman whose brain is small, almost complete skull, teeth, pelvis, limb bones have been found in the remains. This fossil skeleton is the common

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ancestor of the last Ape Human and also suggests that there are differences between the last Ape Human ancestor and the living African ape.

Fossils of *Ardipithecus ramidus* were first found in 1992 and 1994 by American paleontologist Tim White and his team from the middle awash region of Ethiopia. Since then this team has discovered more than 100 fossils of *Ar. ramidus*. In the Afar language of Ethiopia, 'ardi' means 'ground' or 'floor', so Tim White named this species *Ardipithecus* to separate it from *Australopithecus*. Foot bones and pelvis suggest that it could climb on trees and walk on biped. A large number of diamond - shaped canine teeth have been found, suggesting very little difference between the male and female of this species. Remains of animals have been found along with the fossils of 'ardi', so it is estimated that they lived in a wild environment.

AUSTRALOPITHECUS SEDIBA

Specimens of *Australopithecus sediba* were first discovered in 2008 from Malapa, South Africa, while it was published in 2010 and included as a species under the *A. africanus* group. The remains are believed to be 1.98 million years old and belong to the Early Pleistocene. Some parts of the obtained fossil skeleton, such as the upper part of the chest, some teeth and the length of the bones of the limbs and small cranial capacity, are similar to early *Australopithecus*, while the premolars, molars, facial features, pelvis and the lower part of the chest are similar to humans, which has been speculated that it can provide important information about human ancestors. The shape of its pelvis suggests that it could have walked upright on regular basis, while its other physical characteristics are similar to those of australopithecines. Measurements of the humerus and femur of *sediba* indicate greater human symmetry than those of *Homo habilis*. *Au. sediba* is considered an extinct species of australopithecine. The skeletons from Malapa Cave are of a juvenile and a female which have been designated holotype MH1 and paratype MH2 respectively. It is believed that *Au. sediba* was a contemporary of *Paranthropus robustus* and *Homo erectus/Homo ergaster*.

DENISOVANS

Denisovans were discovered in Russia's Denisova cave in 2008 and published in 2010. Information about its physical characteristics is not enough because only one hand digit bone, four teeth, fragments of arm and leg bone, fragments of jaw bone and parietal part of skull have been found in its remains. Its remains are believed to be 500,000 -30,000 years old and on the basis of nuclear DNA analysis of finger bone and tooth, it is estimated that it was a new species different from *Homo sapiens* and *Homo neanderthalensis* which were found 48,000 to 30,000 years ago. This is the first species that was placed in the genus *Homo* on the basis of genes. Denisovans species were being found in Asia in the Lower and Middle Paleolithic period. The species was formally identified in 2010, based on mitochondrial DNA (mtDNA) obtained from a digit bone discovered in 2008 that belonged to a female. Nuclear DNA shows its greater similarity to Neanderthals. Its other remains have been found in Baisia Karst Cave of Tibetan Plateau and Cobra Cave of Annamite Mountains of Laos. DNA evidence suggests that they had a darker skin tone and a Neanderthal-like facial structure, although the molars are larger, similar to those of *Australopithecines*. In 2018, a team led by Vivian Sloan and Svante Paabo of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, identified mitochondrial DNA from a 90,000 year-old long bone fragment recovered from Siberia, Russia, and reported that the remains belonged to the first generation of mixed ancestry. Remain belonged to a 13 year-old girl they named 'Denny' because her 40 percent DNA fragment was identical to the Neanderthal genome and 40 percent to that of the Denisovan. Due to mitochondrial DNA similarities to Neanderthals, the team concluded that Denny's mother was a Neanderthal, and the father was a Denisovan.

Paabo has made important contributions to the discoveries of anthropology and has also contributed to the discovery of this Neanderthal-Denisovan mixed species and understanding their genetic relationship with modern humans, so Paabo was awarded the 2022 Nobel Prize in Physiology/Medicine.

NESHER RAMLA

Scientists from Tel Aviv University and the Hebrew University of Jerusalem discovered early human remains from Israel. The remains include parts of the skull, lower jaw and teeth, which date back 130,000 years and are believed to be the ancestors of Neanderthal humans. The name of this species has been given as *Nasher Ramla* and it is believed that these humans lived with *Homo sapiens* for 100,000 years. This discovery will help to know about the arrival of humans in Asia. Evidence of tools and fauna found with Neanderthal human ancestors' remains in Europe are similar to that found with the early human remains of *Nasher Ramla* in Israel. It is believed that the *Nasher Ramla* is alike extinct archaic humans who lived in the Middle Pleistocene period. Human remains have been found from the *Nasher Ramla* site in 2010–11 and 2021. In 2021, the first *Nasher Ramla* person was identified. As in the Middle Palaeolithic, Levallois tools and lithic cores have been found from the *Nasher Ramla* site. Scientists believe that the *Nasher Ramla* man knew the stone tool making technique as Neanderthals and *Homo sapiens* knew because

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evidence of tool industry has been found which suggests that Neshar Ramla had cultural contact with *Homo sapiens* and Neanderthals.

HOMO NALEDI

Homo naledi was discovered in 2013-15 from the Rising Star Cave in Africa. Due to the receipt of a large number of remains, it was declared in 2015 as a new species named *Homo naledi*. The discovery yielded 1,550 remains of approximately 15 individuals dating back to the Middle Pleistocene, 3, 35,000–236,000 years old. Despite receiving so many remains, its classification could not be done clearly, although it shows similarity in some physical features with *Australopithecus* and early *Homo*. Their cranial capacity is estimated to be 465-610 cm³, average body height is 143.6 cm and weight is 39.7 kg. The brain and body structure of *H. naledi* is as complex as that of contemporary *Homo*. It is estimated that they could walk like humans and could travel long distances. Used to spend more time in trees and were more adapted to hang in trees. They were able to make and use tools, it is estimated that they would be related to the Lower and Middle Paleolithic tool industry. In its fossils, skull, jaws, teeth, ribs and inner ear bones and body parts like hands and feet have also been found, which belong to children, young and old people, some bones have also been found connected like the jaw and hand are connected with the skull. Some of its remains have also been found in 2011 from the Afar region of Ethiopia.

AUSTRALOPITHECUS DEYIREMEDA

The remains of *Australopithecus deremida*, discovered in 2014 from Vorano-Mile, Afar region, Ethiopia, were published in 2014 and scientists determined that they were related to *Australopithecines* and another form of *A. afarensis*. 3 jaw bone fragments and teeth have been found in the remains, on the basis of which these evidences are believed to be of Pliocene period 3.5 to 3.3 million years ago. However, due to the limited number of remains, it is not clear to which species it belongs, although on the basis of the jaws it shows similarity to *Paranthropus*. The mandible in the remains is prognathous, the mandibular bone and enamel are thick, on the basis of which its anatomical features are estimated to be similar to those of *Paranthropus*. It is assumed that their diet would have been hard foods as seen in the characteristics of *Paranthropus robustus*. Scientists estimate that other hominins may have lived during the time of *Australopithecus deremida*, 3.5 to 3.3 million years ago.

HOMO LUZONENSIS

Homo luzonensis is an ancient human species discovered from the Callao Cave of Luzon Island, Philippines and this discovery was published in 2019. Researchers have found 13 bones of 3 different individuals from the sediment of the Callao cave, on the basis of which it has been accepted as a new human species until other evidence is found. It is considered a small species and it shows similarity to *Homo floresiensis* discovered in 2004. *Homo luzonensis* is believed to be 67,000 years old. And it has been accepted as a new branch of the human evolutionary tree.

HOMO LONGI /DRAGON MAN

Scientists have found a 140,000-year-old large-sized skull whose facial part was in good condition from the Dragon River region of Northeast China on 25 June 2021. This skull belonged to an adult male with large forehead, eyebrows, deep set eyes and prominent nose. The researchers named it 'Homo longi' and gave it the nickname "Dragon Man" because it was found in the Dragon River area. Scientists speculated that it was an extinct species of modern man. According to them, this can help in estimating when and where modern humans originated.

REFERENCES

- 1) Blogs.plos.org
- 2) Davis J. 2019, *Homo luzonensis*: new species of ancient human discovered in the Philippines. The Natural history museum.
- 3) Dorey F. The Denisovians, Australian Museum April 20, 2020
- 4) En.wikiversity.org
- 5) Exploring the fossil record: Bradshaw foundation, Paleoanthropology www.bradshawfoundation.com/origin
- 6) Fran Dorey 19.12.19, *Orrorintugensis*
- 7) Haile Selassie Y., Suwa G., White T.D., 2004, Late Miocene teeth from Middle Awash, Ethiopia and early hominid dental evolution. *Science* 303, 1503-1505.
- 8) Handwiki.org
- 9) Handbook of Plaeoanthropology, 2015.
- 10) <https://milnepublishing.geneseo.edu/the-history-of-our-tribe>

Human Fossils from the First Quarter of the 21st Century

- 11) hominini/chapter/sahelanthropus-tchadensis/
- 12) Hominin-evolutrion.weekly.com
- 13) <https://en.wikipedia.org/wiki>
- 14) <https://australian.museum/learn/science/human-evolution/kenyanthropus-platyops/>
- 15) Humanorigins.si.edu
- 16) Knightscholar.geneseo.edu
- 17) Links-to-long-stay-cover.khs.co.uk.
- 18) Michael Balter, Scientists Spar over Claims of Earliest Human Ancestor, *Science* 291, 5508 (23feb 2001): 1460-1461.
- 19) Openlibrary-repo.ecampusontario.ca
- 20) Picasaweb.google.com
- 21) Planet.uwc.ac.za
- 22) Stagii.csie.ase.ro
- 23) Smithsonian, National Museum of Natural History. June 30, 2022.
- 24) Uilis.unsyiah.ac.id
- 25) www.researchgate.net
- 26) Wikkimili.com
- 27) www.smithsonianmag.com
- 28) www.americanessays.com
- 29) www.coursehero.com
- 30) www.slideshare.net
- 31) www.nhm.ac.uk
- 32) www.sciencemagazinedigital.org
- 33) www.forbesindia.com
- 34) www.absoluteastronomy.com
- 35) www.albertpeia.com



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Application of Tamyiz Method in Improving Maharah Kitabah

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ABSTRACT: Application of Tamyiz Method in Improving Maharah Kitabah. This study aims to increase the maharah kitabah of the tenth-grade students of MA Plus Nururrohmah Kebumen by applying the Tamyiz method. This research is a type of Classroom Action Research (CAR) which is carried out in cycles (cycles) in two cycles of action and consists of four stages as follows: 1). Planning 2). Action, 3). Observing, and 4). Reflecting. Data collection techniques were in the form of tests and non-tests, while the research instruments included pre-test items, post-test items, observation sheets, and interviews. The data analysis technique is descriptive comparative by comparing the learning outcomes in the pre-cycle, Cycle I, and Cycle II. The results showed that the taharah ketubah could be improved using the Tamyiz method, which can be used as an alternative to learning Maharaj ketubah. This is evidenced by an increase in student learning outcomes reaching the KKM. Student activity in the first Cycle of the first meeting was 75% in the excellent category, and at the second meeting increased to 82% in the outstanding category. The percentage of student activities in the second Cycle of the first meeting was 89 in the outstanding category; in the second meeting, the percentage was 93% in the outstanding category. The average student activity in the second Cycle is 91%, with an outstanding category. Based on these results, the "Tamyiz" method can increase the Maharah Kitabah.

KEYWORDS: Tamyiz Method, Writing Application, Arabic Language, Maharah Kitabah

I. INTRODUCTION

Arabic is one of the official languages used in international meetings, assemblies, and documents of the United Nations or other international organizations (Gafur & Switri, 2020). Therefore, mastery of Arabic is an important thing to do by the Indonesian people and is not limited to its use only for religious purposes (Sauri, 2020). Arabic language learning is currently experiencing very rapid development. Arabic is not only taught in Islamic-based Islamic boarding schools but has been in great demand by groups outside the pesantren (Susiawati, 2022).

Arabic is taught in Islamic-based educational institutions, even becoming a compulsory subject. It is taught from the level of Madrasah Ibtidaiyah (Elementary School) to Higher Education which refers to the curriculum of the Ministry of Religious Affairs (Ashour, 2020). Arabic institutions or courses have sprung up that offer various methods with course offerings in a short time and are proficient in Arabic (Khumairoh, 2020). This shows that Arabic is increasingly in demand by the public, even though, in reality, Arabic learning is more complicated than other languages (Shendy, 2019).

In Arabic language learning, the skills (maharah) taught are listening skills (maharah al-istima'), speaking skills (maharah al-kalam), reading skills (maharah al-qira'ah), and writing skills (maharah al-kitabah) (Oueslati et al., 2020). So far, the most challenging skill students face is writing skills (Gafur & Switri, 2020). Writing is using written language patterns to express an idea or message. The writing consists of a series of meaningful letters with the completeness of writing symbols, such as spelling and fluctuations (Khumairoh, 2020).

The purpose of the taharah ketubah is, among others, to understand various written discourses. In addition, able to express various kinds of thoughts, ideas, opinions, and feelings in various writings. Maharah ketubah also aims to improve intellectual ability, emotional maturity, and social maturity and to improve students' ability to communicate in writing and use language for various purposes (Rahmawati, 2021). Elements of al-kitabah include al-kalimah, al-sum, al-faqrah, and al-uslub. The aspects are al-qawaid (nahwu and sharf), imla', and khat (Rifa, 2021).

Maharah kitabah is the highest maharah among other maharah (al-istima', al-qira'ah, and al-kalam). In learning Maharaj al-ketubah, many obstacles are faced by Arabic teachers, including minimal vocabulary and difficulty in making sentences due to

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the need for more understanding of nahwu and sharf (Muhammad Hamdan, 2019). Based on observations, researchers found that there needed to be more student motivation, as well as the use of monotonous and less varied learning methods. The obstacles in learning Maharaj ketubah can be seen from the daily test results of students who are still low, and many do not reach KKM.

Based on the data obtained by the author, 75% (21 students) have yet to reach KKM, and 25% (7 students) have completed KKM. About the understanding of nahwu sharf in supporting Maharaj ketubah here, the author tries to conduct research using the Tamyiz method. According to Sumardi, one aspect that is often highlighted is the method. The success or failure of a language teaching program is often judged by the method used because it is the method that determines the content of language teaching (Baroroh & Tolinggi, 2020).

The Tamyiz method is a formulation of the basic theory of quantum nahwu sharf, which is included in the Arabic for Specific Purpose (ASP) category with a straightforward target, namely from childhood elementary / MI children and beginners (i.e., anyone who can read the Qur'an) are good at reading, touching, and writing (imla) the Qur'an and the yellow book (Hidayat, 2022). The material (maddah) taught in the Tamyiz method is a formulation of nahwu sharf theories spread across various nahwu-sharf books that are widely found and studied in Islamic boarding schools and particular institutions that study Arabic studies that have been compiled and become the basic theory in learning nahwu sharf (Qudsi & Anugrah, 2021). The Tamyiz method is easy and fun to teach because teaching uses memory channels in the form of popular songs so that it is easy to memorize and, of course, liked by children.

In addition, this method also emphasizes the aspect of writing (imla'), the Qur'an, and the yellow book. Hence, this method will likely improve students' skills in writing (taharah al-ketubah). Based on this background, the author is interested in researching the Application of the Tamyiz Method in Improving Maharah Kitabah for Class X Students of Madrasah Aliyah Plus Nururrohmah Kebumen. This method is expected to increase the taharah ketubah of grade X MA Plus Nururrohmah Kebumen students.

Based on the background explanation above, there are similar themes from the latest research, including research conducted by (Fauzi & Thohir, 2021) titled "Learning Arabic Calligraphy to Improve Maharah Al-Kitabah". Furthermore, another study (Munawarah & Zulkifli, 2021) wrote: "Learning Writing Skills (Maharah al-Kitabah) in Arabic." Finally, the research entitled "Maharah Kitabah in Arabic Language Learning" (Rathomi, 2020). The three previous studies have similar discussions: how to improve Maharaj kasbah with various methods. However, the location of the difference and novelty value of this research is the improvement of Arabic writing skills with the Tamyiz method for students. Therefore, this study aims to analyze how the tamyiz method improves Arabic writing skills for grade X students of Madrasah Aliyah Nurrohmah Kebumen.

II. METHOD

This research is field research with a descriptive qualitative approach. This research was conducted in class X IIS (Social Humanities) Madrasah Aliyah Plus Nururrohmah, Kebumen. The research was conducted from June 1-July 1, 2022, with the subjects of 28 students consisting of 16 women and 12 men. This research was carried out in as many as 2 cycles with 4 meetings, and a test was held at the end of the Cycle. 2 peer observers assisted researchers in observing the activities of teachers and students during the teaching and learning process. Every learning is carried out by applying the Tamyiz method. This research is class action research (PTK), while the design of class action research (PTK) is a cycle model that implements two cycles, namely Cycle I and Cycle II. Each Cycle consists of a planning, implementation, observation, and reflection stage. The observations and reflections in Cycle I improved the learning process of Cycle II (Jacub, 2019).

The data obtained from this study are data on writing ability (maharah) obtained through tests conducted at the end of each Cycle and observation data on teacher and student activities. This research instrument consists of learning tools and data collection instruments. Learning tools consist of syllabi, lesson plans, and LKS. The data collection instrument consists of a writing ability test (taharah ketubah), an interview, and an observation sheet. Data collection techniques are obtained using tests, interviews, documentation, and observation (observation). The data analysis technique aims to determine the activities of teachers and students during the learning process by applying the Tamyiz method and to observe the extent to which the minimum completeness criteria (KKM) are achieved.

Research data is analyzed through descriptive qualitative, namely data obtained from various sources using various data collection techniques and carried out continuously until the data is saturated. Qualitative data were obtained by applying the Tamyiz method to the results of taharah ketubah guided by observation sheets. Quantitative data is obtained by applying the Tamyiz method from the test results of each Cycle; in this case, researchers use descriptive statistical analysis, namely the average score and completeness of student learning. After the author obtains data through data collection techniques from the research process, the next step is to analyze the data.

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III. RESULTS AND DISCUSSION

1. Understanding the Tamyiz Method in *Maharah Kitaba Arabic*

The Tamyiz method is one of the methods of learning and teaching Arabic that focuses on understanding and recognizing Arabic letters and grammar rules (Hidayat, 2022). This method aims to assist learners in identifying, distinguishing, and understanding the sounds and shapes of Arabic letters and the grammar used in writing and reading (Azman et al., 2022). In the Arabic language, education has a vital role in introducing and developing students' understanding of Arabic in terms of reading, writing, and understanding in general. One effective method of Arabic language education is the Tamyiz method. This method emphasizes the understanding and recognition of Arabic letters and Arabic grammar rules (Ningrum et al., 2023).

The Tamyiz method utilizes a systematic and structured approach to teaching Arabic to students (Samad, 2022). In its application, this method introduces students to Arabic letters gradually, from the introduction of written forms and pronunciation to examples of their word use. It aims to build a solid foundation for students in understanding and mastering individual Arabic letters (Arafat et al., 2020). In addition, this method also focuses on the correct pronunciation in Arabic. Students are taught to distinguish and master the differences in sounds between similar Arabic letters to pronounce them correctly (Aidah et al., 2023). Students will learn different pronunciation rules, such as nun sukun law, tasted, and others.

Furthermore, the Tamyiz method also helps students understand the rules of Arabic grammar. They are taught basic rules in word formation, the use of nouns, verbs, and correct sentence construction (Hartati, 2023). By understanding these grammatical rules, students can build grammatical sentences and avoid mistakes in using Arabic (Wildan & Fuad, 2019). The Tamyiz method also integrates writing exercises as an integral part of the learning process. Students will be involved in copying letters and words in Arabic script. Through this exercise, students can develop their writing skills and hone their accuracy in writing Arabic letters correctly (Ilmi, 2021).

In addition, the Tamyiz method also plays a role in developing students' vocabulary. Students will be introduced to new words in Arabic and learn their meanings in relevant contexts (Faridah et al., 2022). Mastery in Arabic vocabulary, students can better express their ideas and thoughts in Arabic. The application of the Tamyiz method in Arabic language education has several advantages. First, it helps students build a solid foundation in understanding Arabic letters, correct pronunciation, and grammatical rules. Second, students can develop their writing skills through structured writing exercises. Third, the Tamyiz method also contributes to developing students' vocabulary, expanding their communication skills in Arabic (Nurfitriani et al., 2020).

2. Application of Tamyiz Method in *Arabic Maharah Kitaba*

The Tamyiz method is a practical approach to Arabic language education. Through this method, students can understand Arabic letters, correct pronunciation, grammar, and vocabulary development (Hidayat, 2022). With consistent application of the Tamyiz method, students will be able to acquire solid Arabic language skills and be able to communicate well in the language (Aidah et al., 2023). The application of the Tamyiz Method in Writing Arabic is as follows:

- a. **Arabic Letter Recognition:** The Tamyiz method assists learners in recognizing and understanding the shapes and sounds of each Arabic letter individually. This method involves gradually recognizing letters, from written form and pronunciation to examples of their word use (Wildan & Fuad, 2019).
- b. **Correct Pronunciation:** The Tamyiz Method pays excellent attention to the correct pronunciation in Arabic. This method allows learners to identify sound differences between similar Arabic letters and understand different pronunciation rules (Ilmi, 2021).
- c. **Understanding Grammar Rules:** The Tamyiz Method helps learners understand Arabic grammar rules in a structured manner. It includes basic rules for forming Arabic words, sentences, and constructions. By understanding these rules, learners can structure sentences correctly and avoid grammatical errors (Ilmi, 2021).
- d. **Writing Exercises:** The Tamyiz Method involves writing exercises to help learners develop writing skills in Arabic. This involves practicing copying letters and words in Arabic form and practicing using grammatical rules in the proper context (Ningrum et al., 2023).
- e. **Vocabulary Development:** The Tamyiz method also supports vocabulary development in Arabic. Learners are invited to learn new words and their meanings in relevant contexts. This helps learners to expand their understanding of Arabic and improve their writing skills (Nurfitriani et al., 2020).
- f. The Tamyiz method is a practical approach to learning and teaching Arabic, especially regarding recognizing Arabic letters, correct pronunciation, grammatical comprehension, writing practice, and vocabulary development. By applying this method consistently, learners will be able to gain a solid foundation in writing Arabic and be able to expand their language skills over time.

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3. Comparison of Pre-Cycle with Cycle 1: Meeting 1 and Meeting 2 on Student Activities

The pre-cycle activities in this study were implemented by collecting data that researchers had collected related to strategies, methods, or learning media used in the implementation of taharah ketubah learning in Class X MA Plus Nururrohmah Kebumen Regency. The method used in the pre-cycle is to use a similar method.

The obstacles to the learning process in the pre-cycle are students' lack of enthusiasm, lack of mufradat treasury, and the need to understand the correct rules in writing Arabic. Therefore, many students still need to complete their learning outcomes and have not reached the KKM determined by the madrasah. This can be seen from the 28 students who completed 7 students and the incomplete 21 students. From the information above, it can be concluded that the taharah ketubah results of grade X MA Plus Nururrohmah Kebumen students are still low.

Therefore, learning must be planned and packaged as well as possible by choosing the right, engaging, and relevant methods. The method that the author raised in this study is the Tamyiz method which is a method using song walkways in the learning process of nahwu sharf rules and mufradat so. That this method may be exciting and fun to learn, which is likely to be able to help students understand the rules and increase the vocabulary that is a reference in taharah ketubah.

To determine the success of this study, it is necessary to compare the value of the results of taharah ketubah before the Cycle and the value of the results of taharah ketubah cycle 1, meeting 1, and meeting 2. This can be seen in the following comparison table of pre-cycle and cycle I student learning outcomes:

Table 1. Comparison of Pre-Cycle Maharah Kitabah Results, Meeting 1 and Meeting 2

No	Value Categories	Average Cycle 1	Average Cycle 2	Cycle 1 and Cycle 2 Increase Percentage
1.	Unfinished KKM	39.3 % (11 students)	0 % (0 students)	39.3 %
2.	Complete KKM	60.7 % (17 students)	100% (28 students)	39.3 %
3.	Same value KKM	3.6 % (1 student)	0 % (0 students)	3.6 %
4.	Value Beyond KKM	57.1 % (16 students)	100% (28 students)	42.9 %
5.	Value below KKM	39.3 % (11 students)	0 % (100 students)	39.3 %

Based on the results of the comparison of pre-cycle Maharaj Kasbah, meeting 1 and meeting 2 in Table 1 above, it shows that in the category of students who have incomplete scores, KKM experienced an average increase of 11 students or 30.9% complete KKM. Furthermore, the KKM complete score category also increased with an average of 17 students or 60.7% complete KKM. In the highest score category, it increased from 75 to 87. Similarly, there is a category of the lowest value experiencing a nation which was initially 50 to 58.

Furthermore, the average grade point of the class, which was initially 59.5, rose to 71. In the same grade category as KKM in the pre-cycle, there were 2 students, but there was an increase in meeting 1 to 3 students, and at meeting 2 decrease to 1 student who had the same score as KKM. Then in the category of scores exceeding KKM, which initially amounted to 5 students, it rose to 18 with scores above KKM. Finally, in the category of scores below KKM, there was an increase from initially, there were 21 students to 9 students with scores below KKM.

The data in Table 1 above show that the tamyiz method can increase the mahram kasbah of grade X students at MA Plus Nurrohmah, Kebumen. This is evidenced by the increased value in all categories ranging from incomplete KKM to values below KKM. Then, to see the results in more detail, the percentage increase in the Cycle at meeting 1 and meeting 2 is described in Table 1 and Figure 2 below:

Table 2. Percentage Increase Cycle 1 Meeting 1 and Meeting 2

No	Value Categories	Cycle 1 Meeting 1	Cycle 1 Meeting 2	Percentage Increase in
1.	Unfinished KKM	39.3% (11 students)	32.1% (9 students)	7.2 %
2.	Complete KKM	60.7 % (17 students)	67.9 % (19 students)	7.2 %
3.	Same value KKM	10.7 % (3 students)	3.6 % (1 student)	7.1 %
4.	Value Beyond KKM	50% (14 students)	64.3 (18 students)	14.3 %
5.	Value below KKM	39.3 % (11 students)	32.1 % (9 students)	7.2 %

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The comparison between the increase in Pre-action (pre-cycle) with the Average Value of Cycle 1 Meeting 1 and Meeting 2 can be seen in the table below:

Table 3. Pre-Cycle Increase Percentage and Average Cycle Value 1

No	Value Categories	Pre-Cycle	Average	Percentage Increase
1.	Unfinished KKM	75% (21 students)	39.3 % (11 students)	36 %
2.	Complete KKM	25% (7 students)	60.7 % (17 students)	36 %
3.	Same value KKM	7.1 % (2 students)	7.1 % (2 students)	0 %
4.	Value Beyond KKM	17.8 % (5 students)	57.1 % (19 students)	39 %
5.	Value below KKM	75% (21 students)	39.3% (11 students)	36 %

From the table above, it can be seen that in the pre-action, the percentage of students who have not completed KKM is 75% with a total of 21 students, completes KKM 25% with a total of 7 students, the exact value is KKM 7.1% with a total of 2 students, the value exceeds KKM 17.8% with a total of 5 students, and the value is below KKM 75% with a total of 21 students. The average for Cycle 1 Meeting 1 and Meeting 2 are students who have not completed KKM 39.3% (11 students) with a percentage increase of 36%, complete KKM 60.7% (17 students) with an increase of 36%, the exact value of KKM 3.6% (2 students) with a percentage increase of 0%, surpassing KKM 57.1% (19 students) with a percentage increase of 39%, scores below KKM 39.3% (11 students) with a percentage increase of 36%.

From these data, the results of student Maharaj ketubah experienced a significant increase of 60.7%, completed with an increase of 39.3%. However, learning in cycle 1 has not been successful because it has yet reached the target of at least 75% of students who have completed KKM (65). Therefore, it needs to be improved and continued in the next Cycle.

Based on the observations made in Cycle I, the condition of class X MA Plus Nururrohmah Kebumen students, as observed by researchers through observation, can be concluded that students feel pretty happy to learn Arabic, especially in taharah ketubah. Students are more active in learning than pre-action, but some are still passive, especially in discussing and expressing opinions. Students are more enthusiastic about learning, but some could be more enthusiastic. Students do not feel bored in learning but have not-so-visible cheerful faces of students in learning. Some students have not been able to understand the mufradat and rules of Arabic well, and the learning outcomes of many students have yet to reach KKM.

4. Results of Pre-Cycle Comparison with Cycle 1: Meeting 1 and Meeting 2 on Teacher Activities

In this Cycle, teacher activities also become better than in pre-action. As for the observations of peer observers in Cycle I, among others: teachers master learning material more but not optimally; Learning methods are getting more and more enjoyable; The strategy used is better but not optimal; Teachers have not managed learning time well. So, in order to respond to the above, it is necessary to make improvements among them:

- Provide motivation and guidance to fewer active students.
- Maximize learning methods.
- Improve and improve learning strategies.
- Explains the Tamyiz method.
- Emphasize evaluation to measure learning outcomes.
- Prepare carefully in Cycle II so that the shortcomings in Cycle I will be avoided.

The percentage of teacher and student activities in learning can be seen in the following diagram:

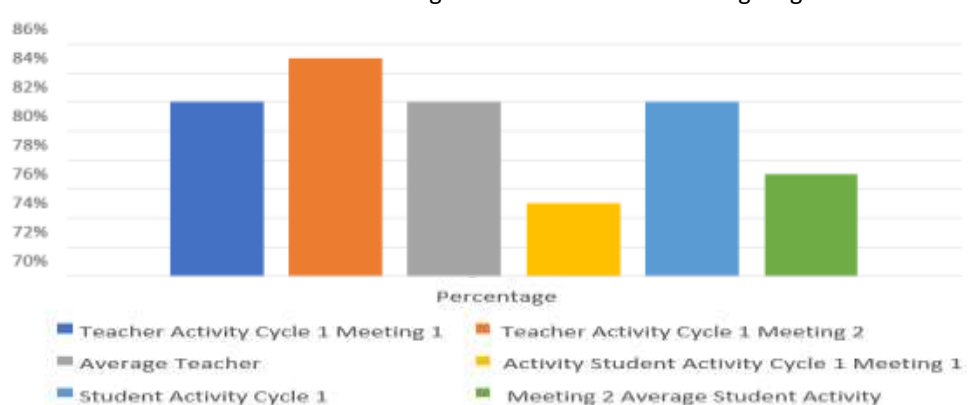


Figure 3. Teacher and Student Activities

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Based on the data in Figure 3 above, the activities of teachers and students are said to be good. Teacher activity in clause 1 meeting 1 by 82% increased to 85% in cycle 1 meeting 2. So the Tamyiz method, when viewed in increased teacher activity, can affect the level of student activity. As shown in Figure 3 above, cycle 1 meeting 1 student activity is 75% to 80% in cycle 1 meeting 2.

5. Comparison of Pre-Cycle with Cycles 1 and 2: Meeting 1 and Meeting 2 on Student Activities

To determine the success of applying the Tamyiz method in improving students' maharah kitabah, *it is necessary to compare the learning outcomes of cycle 1 with cycle 2*, which will be explained in the following table:

Table 4. Comparison of Maharah Kitabah Results Cycle 1 and Cycle 2 Meeting 1 and 2

No	Category	Cycle 1	Cycle 2	Cycle 2	Average
1.	Unfinished	39.3 % (11	10.7 % (3 students)	0 % (0 students)	0% (0 students)
2.	Complete (= /> KKM)	60.7 % (17	89.3 % (25 students)	100% (28 students)	100% (28 students)
3.	Value	86	90	95	92
4.	Value	56	60	75	67
5.	Average	69	76	85	79
6.	A value equal to KKM	3.6 % (1	0 % (0 students)	0 % (0 students)	0% (0 students)
7.	Value beyond KKM	57.1 % (16	89.3 % (25 students)	100% (28 students)	100% (28 students)
8.	Value below KKM	39.3 % (11	10.7 % (3 students)	0 % (100 students)	0% (100 students)

The following author presents the percentage increase in the value of maharah kitabah cycle 2 meetings 1 and 2 explain in Table 5 as follows:

Table 5. Percentage Increase in Value of Cycle 2 Meetings 1 and 2

No	Value Categories	Cycle 2 Meeting 1	Cycle 2 Meeting 2	Percentage Increase cycle 2 meetings 1 and 2
1.	Unfinished KKM	10.7 % (3 students)	0 % (0 students)	10.7 %
2.	Complete KKM	89.3 % (25 students)	100% (28 students)	10.7 %
3.	Same value KKM	0 % (0 students)	0 % (0 students)	0 %
4.	Value Beyond KKM	89.3 % (25 students)	100% (28 students)	10.7 %
5.	Value below KKM	10.7 % (3 students)	0 % (100 students)	10.7 %

The comparison between the average increases of cycle 1 with the average value of cycle 2 can be seen in the following table and diagram:

Table 6. Percentage Increase in Cycle 1 and Cycle Average Value 2

No	Value Categories	Average Cycle 1	Average Cycle 2	Cycle 1 and Cycle 2 Increase Percentage
1.	Unfinished KKM	39.3 % (11 students)	0 % (0 students)	39.3 %
2.	Complete KKM	60.7 % (17 students)	100% (28 students)	39.3 %
3.	Same value KKM	3.6 % (1 student)	0 % (0 students)	3.6 %
4.	Value Beyond KKM	57.1 % (16 students)	100% (28 students)	42.9 %
5.	Value below KKM	39.3 % (11 students)	0 % (100 students)	39.3 %

From the table above, in cycle 1, the percentage of students who have not completed KKM is 39.3% (11 students), complete KKM 60.7% (17 students), the same score KKM 3.6% (1 student), the score exceeds KKM 57.1% (16 students), and the score below KKM 39.3% with (11 students). The average for Cycle 2 Meeting 1 and Meeting 2 are students who have not completed KKM 0% (0 students) with a percentage increase of 39.3%, complete KKM 100% (28 students) with an increase of 39.3%, the same value KKM 0% (0 students) with a percentage increase of 3.6%, surpassing KKM 100% (28 students) with a percentage increase of 42.9%, score below KKM 0% (11 students) with a percentage increase of 39.3%. From these data, the results of student Maharaj ketubah experienced a significant increase of 60.7%, completed with an increase of 39.3%. Learning in Cycle II is said to be successful and has experienced a significant increase because it has reached the target of 100% of students who

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have completed KKM (65). Therefore it can be said that the Tamyiz method is very significant in increasing students' Maharaj ketubah.

Based on the results of observations and evaluations of the application of the Tamyiz method in improving maharah kitabah in Cycle II are:

- Students feel happy and excited about learning Arabic, especially in taharah ketubah.
- Students are more active in learning.
- Students are more enthusiastic about learning; it can be seen from the cheerful and energetic look on their faces.
- Students are more active in discussing and dare to respond to their friends' questions.
- Students do not feel bored learning because learning methods and strategies are interesting.
- Students find it easier to understand Arabic mufradat and rules, making it easier to write Arabic (Kitabah).

Students are more creative because they are supported by the learning methods used by the teacher. The teacher's activity is also better than in cycle 1, as for the observations of peer observers in cycle 1 are:

- Teachers master learning materials better.
- The learning method is getting more interesting because it has been improved and perfected.
- The learning strategies used are better and more enjoyable.
- The learning process runs on time.
- Teachers are getting better at managing learning.

The percentage of teacher and student activities can be seen in the following diagram:

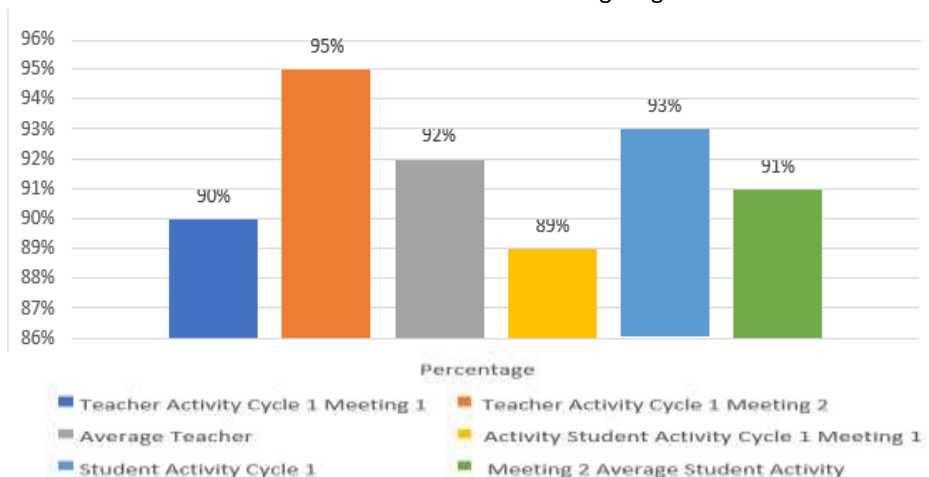


Figure 6. Teacher and Student Activities in Cycle 2

From the diagram above, the activities of teachers and students are perfect. The results mentioned above, then the results of student learning in taharah ketubah through the application of the Tamyiz method to class X MA Plus Nururrohmah Kebumen students, are stated to be able to improve student Maharaj ketubah; the increasing learning outcomes of students in each cycle evidence this. Cycle I has 60.7% completeness, while the second Cycle has 100% completeness.

IV. CONCLUSIONS

From the results of the research that has been carried out, it can be concluded that the application of the Tamyiz method can increase the maharah kitabah of MA Plus Nururrohmah Kebumen students, it is shown by the average in the first Cycle increased by 36% to 17 students who completed (60.7%) with an average grade score of 69, while in the second Cycle, the average increased by 39.3% to 28 students (100%) with an average grade score of 79. The percentage of teacher activity in the first Cycle of the first meeting was 82%, with a good category. At the second meeting, the percentage increased to 85% in the excellent category. The average percentage of teacher activity in the first Cycle is 82% in the excellent category. Student activity in the first Cycle of the first meeting was 75% with a good category; in the second meeting, it increased to 82% with an outstanding category. The average of the first and second meetings was 77% in the excellent category. The activity of the second cycle teacher of the first meeting was 90% with the excellent category; the second meeting increased to 95% with the outstanding category. The average activity of the second cycle teacher percentage is 92.5%, with an outstanding category. Student activity in the second Cycle of the first meeting was 89 with an outstanding category, and in the second meeting, a percentage of 93% with an outstanding category. The average activity of the second cycle students is 91%, with an outstanding category.

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ACKNOWLEDGMENT

Thank you to the leadership, teachers, staff, and grade X students of Madrasah Aliyah Nurrohmah Kebumen, who have been willing to be the subject of this research.

REFERENCES

- 1) Aidah, A. N., Fadhel, A., Hidayat, S., & Annisa, M. N. (2023). Pengaruh Metode Tamyiz terhadap Penguasaan Kosakata Mata Pelajaran Bahasa Arab Siswa Kelas V SDI Al-Azhar 47 Samarinda. *Borneo Journal of Islamic Education*, 3(1), 101–116.
- 2) Arafat, Y., Misdar, M., & Naufal, M. (2020). Metode Tamyiz Dalam Keterampilan Bahasa Arab Santriwan (Studi Kasus Di Pondok Pesantren Muqimussunnah Palembang). *Tadrib*, 6(1), 62–77. <https://doi.org/10.19109/tadrib.v6i1.5403>
- 3) Ashour, S. (2020). How technology has shaped university students' perceptions and expectations around higher education: an exploratory study of the United Arab Emirates. *Studies in Higher Education*, 45(12), 2513–2525. <https://doi.org/10.1080/03075079.2019.1617683>
- 4) Azman, A., Mannan, M., & Darim, A. (2022). Manajemen Pembelajaran Nahwu Sharaf Menggunakan Metode Tamyiz Pada Masa Pandemi Covid 19. *Kharisma: Jurnal Administrasi Dan Manajemen Pendidikan*, 1(1), 59–68. [http://repository.ikhac.ac.id/id/eprint/1425/%0Ahttp://repository.ikhac.ac.id/id/eprint/1425/2/BAB I AZMAN ARIF TESIS.pdf](http://repository.ikhac.ac.id/id/eprint/1425/%0Ahttp://repository.ikhac.ac.id/id/eprint/1425/2/BAB_I_AZMAN_ARIF_TESIS.pdf)
- 5) Baroroh, R. U., & Tolinggi, S. O. R. (2020). Arabic Learning Base On A Communicative Approach In Non-Pesantren School/ Pembelajaran Bahasa Arab Berbasis Pendekatan Komunikatif Di Madrasah Non-Pesantren. *Ijaz Arabi Journal of Arabic Learning*, 3(1), 64–88. <https://doi.org/10.18860/ijazarabi.v3i1.8387>
- 6) Faridah, E. S., Nida, S., Dahlan, Z., & Ernawati, E. (2022). Penerapan Metode Tamyiz Dalam Meningkatkan Menerjemah Al-Quran di Sekolah SMK Informatika Utama Krukut Depok. *Mimbar Kampus: Jurnal Pendidikan Dan Agama Islam*, 22(1), 61–76. <https://doi.org/10.47467/mk.v22i1.1859>
- 7) Fauzi, M., & Thohir, M. (2021). Pembelajaran Kaligrafi Arab untuk Meningkatkan Maharah Al-Kitabah. *EL-IBTIKAR: Jurnal Pendidikan Bahasa Arab*, 9(2), 226. <https://doi.org/10.24235/ibtikar.v9i2.6554>
- 8) Gafur, A., & Switri, E. (2020). Implementasi Manajemen Pembelajaran Bahasa Arab di Jurusan Hubungan Internasional Universitas Sriwijaya Indralaya. *Jurnal Pendidikan Bahasa Arab Dan ...*, 1(2). <https://online-journal.unja.ac.id/Ad-Dhuha/article/view/10918>
- 9) Hartati, E. D. (2023). Implementasi Pembelajaran Bahasa Arab dengan Metode Tamyiz pada Siswa di SMP IT Al Munadi Medan Implementation of Learning Arabic with the Tamyiz Method for Students at SMP IT Al Munadi Medan. *Edu Society: Jurnal Pendidikan, Ilmu Sosial, Dan Pengabdian Kepada Masyarakat*, 3(1), 877–882. <https://jurnal.permapendis-sumut.org/index.php/edusociety> Implementasi
- 10) Hidayat, R. (2022). Implementasi Metode Tamyiz dalam Pembelajaran Terjemah Al-Quran di Sekolah Dasar, Sekolah Menengah Pertama, dan Sekolah Menengah Atas Islam Sabilah Munthadin Banjarmasin. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, 16(5), 1876–1895. <https://doi.org/10.35931/aq.v16i5.1245>
- 11) Ilmi, N. F. (2021). Metode “Tamyiz” Untuk Pembelajaran Nahwu dan Sharaf Pada Al’Qur’an. *Seminar Nasional Bahasa Arab Mahasiswa V Tahun 2021 HMJ Sastra Arab Fakultas Sastra Universitas Negeri Malang*, 542–552.
- 12) Jacub, T. A. (2019). Jurnal Penelitian Tolis Ilmiah. *Tolis Ilmiah; Jurnal Penelitian*, 1(2), 124–129.
- 13) Khumairoh, R. (2020). Analisis Hubungan Latar Belakang Pendidikan Dengan Kemampuan Berbicara Bahasa Arab Siswa Kelas X MAN 2 Kota Malang. *Semnasbama Seminar Nasional Bahasa Arab Mahasiswa*, 7(1), 46.
- 14) Muhammad Hamdan. (2019). Konstruktivisme Pembelajaran Bahasa Arab Komunikatif. *Prosiding Konferensi Nasional Bahasa Arab V*, 53(9), 132–140. <file:///C:/Users/TOSHIBA/Downloads/487-948-1-SM.pdf>
- 15) Munawarah, M., & Zulkifli, Z. (2021). Pembelajaran Keterampilan Menulis (Maharah al-Kitabah) dalam Bahasa Arab. *Loghat Arabi : Jurnal Bahasa Arab Dan Pendidikan Bahasa Arab*, 1(2), 22. <https://doi.org/10.36915/la.v1i2.15>
- 16) Ningrum, R. L., Suyud, R., Syam, E., & Imron, A. (2023). Efektivitas Metode Tamyiz Dalam Meningkatkan Pemahaman Nahwu Dasar Pada Siswa Kelas VII MTs Al-Futuhiyyah Wonosobo. *Jispendiora: Jurnal Ilmu Sosial Dan Pendidikan Dan Humaniora*, 2(1).
- 17) Nurfitriani, D., Priyatna, O. S., & Suhendra. (2020). METODE TAMYIZ TERHADAP KEMAMPUAN SANTRI DALAM MENTERJEMAHKAN AI-QUR’AN. *Jurnal Penelitian Pendidikan Sosial Humaniora*, 5(2), 87–92. <https://jurnal-lp2m.um naw.ac.id/index.php/JP2SH/article/view/539>
- 18) Oueslati, O., Cambria, E., HajHmida, M. Ben, & Ounelli, H. (2020). A review of sentiment analysis research in the Arabic language. *Future Generation Computer Systems*, 112, 408–430. <https://doi.org/10.1016/j.future.2020.05.034>

Application of Tamyiz Method in Improving Maharah Kitabah

- 19) Qudsi, A. H., & Anugrah, D. (2021). Penerapan Metode TAMYIZ (Cara Asyik Belajar Bahasa Arab) untuk Anak. *Proceedings UIN Sunan Gunung Djati Bandung*, 45, 1–5. <https://proceedings.uinsgd.ac.id/index.php/Proceedings>
- 20) Rahmawati, E. D. (2021). Pendekatan Komunikatif Dalam Tes Kemampuan Berbicara Bahasa Arab. *Lugawiyat*, 3(1), 77–95. <https://doi.org/10.18860/lg.v3i1.12321>
- 21) Rathomi, A. (2020). Maharah Kitabah Dalam Pembelajaran Bahasa Arab. *Jurnal Keguruan Dan Pendidikan Islam, TARBIYA ISLAMICA ISSN (p): 2303-3819-; ISSN (E);*, 1, 1–8. http://ojs.iaisambas.ac.id/index.php/Tarbiya_Islamica/index
- 22) Rifa, A. (2021). Kajian Filosofi Pendekatan Komunikatif dalam Pembelajaran Bahasa Arab. *Jurnal Pendidikan Dan Pemikiran*, 1(1 November), 60–74. <http://ejournal-revorma.sch.id/index.php/mansa/article/view/1>
- 23) Samad, M. A. (2022). Pengaruh Penggunaan Metode TAMYIZ Terhadap Kemampuan Menerjemah Teks Berbahasa Arab Oleh Peserta Didik Kelas VIII MTs Al-Falah KAB. Gorontalo. *Al-Kilmah: Jurnal Pendidikan Bahasa Arab & Humaniora*, 1(2), 135–158. <http://ejournal.iaingorontalo.ac.id/index.php/AL-KILMAH>
- 24) Sauri, S. (2020). Sejarah Perkembangan Bahasa Arab Dan Lembaga Islam di Indonesia. *INSANCITA: Journal of Islamic Studies in Indonesia and Southeast Asia*, 5(1), 73–88.
- 25) Shendy, R. (2019). The limitations of reading to young children in literary Arabic: The unspoken struggle with Arabic diglossia. *Theory and Practice in Language Studies*, 9(2), 123–130. <https://doi.org/10.17507/tpls.0902.01>
- 26) Susiawati, I. (2022). Bahasa Arab Bagi Muslim Indonesia antara Identitas dan Cinta pada Agama. *Jurnal Pendidikan Dan Konseling*, 4(5), 1349–1358.
- 27) Wildan, K., & Fuad, A. J. (2019). Implementasi Metode Tamyiz Dalam Pembelajaran Baca Kitab Kuning. *AL-WIJDĀN Journal of Islamic Education Studies*, 4(1), 91–105. <https://doi.org/10.58788/alwijdn.v4i1.301>



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The Practice and Application of Computer-Aided Translation Technology in English Teaching



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ABSTRACT: English teaching is essential to computer-aided translation technology (CATT). It can improve students' learning efficiency and cultivate their comprehensive ability. It can also promote China's cultural dissemination and international exchange. This paper mainly introduces the characteristics of computer-aided translation technology and how to effectively apply it to real life to analyze and study its significant impact on our daily work. Then this paper designs an English teaching-assisted translation model based on computer-aided technology. Then the performance of the English teaching model is tested by simulation. The test results show that the accuracy of computer-aided translation is more than 92%, and the translation time is within 10s. This shows that the model can meet users' needs and provide constructive suggestions and opinions for English teachers to improve English teaching.

KEYWORDS: Computer-aided translation technology, English teaching, practical application, performance, English teaching model

I. INTRODUCTION

With the continuous growth of computer technology, China has gradually begun to use CAT in English teaching, but many domestic universities have not yet fully mastered this field (Marzulina, Mukminin, Desvitasari, Yaakob and Ropawandi, 2018; Klimova, 2018). However, some schools have carried out relevant research and achieved specific results. However, due to its late start, lack of experience, and other reasons, this discipline is still in the primary stage, and there are many problems and defects to be solved and improved. At the same time, some schools neglect the application of computer technology, even ignoring the content and teaching mode in this area, dramatically affecting the improvement of students' learning ability and comprehensive quality (Saienko, Olizko, and Arshad, 2019; Basal, 2019).

Although some achievements have been made in the research of CAT in foreign countries, it lags behind foreign countries due to China's national and international conditions. First, domestic scholars have made an in-depth discussion on computer translation theory. At present, the problems existing in the application of information technology in English teaching in China are mainly manifested in the following aspects: First, there is a lack of relevant professionals; second, there is no unified standard to guide practical activities; third, in the actual operation process, Nowakowska, Beben, and Pajecki (2020) and Akayoğlu (2021) believed that it is unable to effectively realize the characteristics of information resource sharing, diversification, and multi-channel communication methods. Some scholars have analyzed English information retrieval and decoding systems and discussed how different methods could improve translation quality, efficiency, and accuracy. Some scholars, taking a university as an example, discussed the information technology tools and related software used in English teaching. This research project mainly discussed language coding technology and computer-aided design (Bowen, 2021; Wang, Kumar, and Dinesh, 2021). Therefore, based on computer-aided technology, this paper studies translation technology in English teaching.

With the rapid growth of computer technology, people have new requirements for information transmission, storage, and processing capabilities, which requires us to improve their translation speed in the process of learning constantly. And all this depends on the computer network. Therefore, integrating modern information technology with English teaching is an important topic facing foreign language education in China. This paper mainly introduces the research status and growth trend of language knowledge extraction and application utilizing computer-aided translation, and then analyses and discusses the impact of computer technology on traditional grammar, syntax, semantics, and other information transmission capabilities and puts forward corresponding suggestions.

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CATT is based on the language information of the text. It uses computers, voice, and other tools to express relevant information and to understand the relationship between sentences, phrases, and text content to achieve the information processing and expression between English learners and text content. Its main task is to convert language knowledge into images, voice, and other forms. In this case, it is necessary to use the network for data transmission (Tlili et al., 2021; Tzagkourni, Chlapana, and Zaranis, 2021). At this stage, it is required to complete information transmission and data sharing through the Internet. At the same time, it is also required to use computers as media to store files, translate, and do other activities. In addition, computer technology can be applied. The application of this method in English teaching will also cause many problems. There are some problems in the students' learning process. Second, teachers cannot quickly grasp these knowledge points and skills, leading to many mistakes or irregularities in the classroom. CATT takes voice as the information carrier and uses multimedia forms such as images, words, and charts to convert text language into digital content. Using CATT in English learning can improve the efficiency and quality of English teaching. Specifically, through the analysis and retrieval of different paragraphs, we can better understand the meaning to be expressed and use network resources to achieve the retrieval and editing of relevant knowledge information so that students can more easily and quickly obtain the information they want.

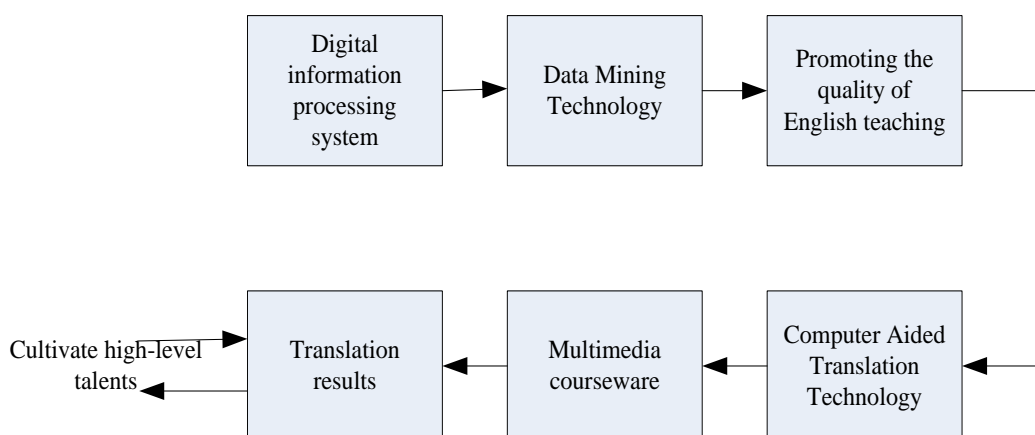


Figure 1. Digital information processing system

It includes digital information processing systems (multimedia courseware) and data mining technology. As shown in Figure 1, this method can help students better learn and understand what they have learned and improve teachers' professional quality and work efficiency. On the one hand, it can promote the quality of English teaching. On the other hand, it is a summary of experience in the practical application of CATT. It can make it easier for students to understand and master knowledge and skills. It can also improve students' ability to analyze and apply the professional texts they have learned and their comprehensive quality in other aspects to cultivate high-level talents (Sharadgah, Sa'di, 2022; Alotaibi and Alharbi, 2022).

The classification of CAT can be divided into the following aspects:

(1) Translate by text and voice. In this case, we need to use language to express information. Voice is the most straightforward way to convey information. Therefore, it has vital flexibility. In addition, it has the characteristics of accuracy and high automation required at a higher level. In addition, it can help improve the effectiveness and efficiency of English learning. In addition, it can help students better understand and memorize the meaning of words to carry out translation and other advantages and characteristics.

(2) Press Computer-aided translation. Take text as the primary information, and express it in text, pictures, etc. The corresponding numerical symbols and letter elements are added to the language materials, and the translation activities, mediated by grammar, are produced through language or other means and used together with computer technology.

(3) Appropriate translation methods should be adopted according to different contexts. Modifying the language content after completing the corresponding tasks as required is to achieve the English teaching goal on the original basis. Based on network technology translation, this way can transmit language information through the Internet and complete language exchange and communication. Its feature is to use computers to achieve data sharing and communication functions to achieve fast and accurate decoding, timely and efficient processing, and flexible use. At the same time, it can also supplement and modify the text content on the computer to improve the quality of translation.

(4) Translations are classified by language category. In computer software, English can be regarded as a system and a text, text, or other forms of information expression. For other topics, unique methods should be used to solve the problems, such as how to transform each other and deal with the relationship between them.

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CATT is a text-based language structure and information processing method based on digitalization, informatization, etc., with the help of a computer network communication system to connect with the relevant content in the decoding software. However, traditional manual translation has many drawbacks: the first is that the intention conveyed by the original text cannot be accurately understood, and the second is that the translation cannot be correctly understood; third, there may be an unnecessary loss, waste, and cost problems when incorrect decoding occurs, and even a lot of time is needed to modify and retranslate them. The principle of computer translation technology is to analyse and process a large amount of data and information in the computer and explain them accordingly. This translation method can effectively improve the efficiency of translation understanding. In English learning, you can use the network, multimedia, and other tools to complete the expression of relevant content. Figure 2 is a computer-aided translation process.

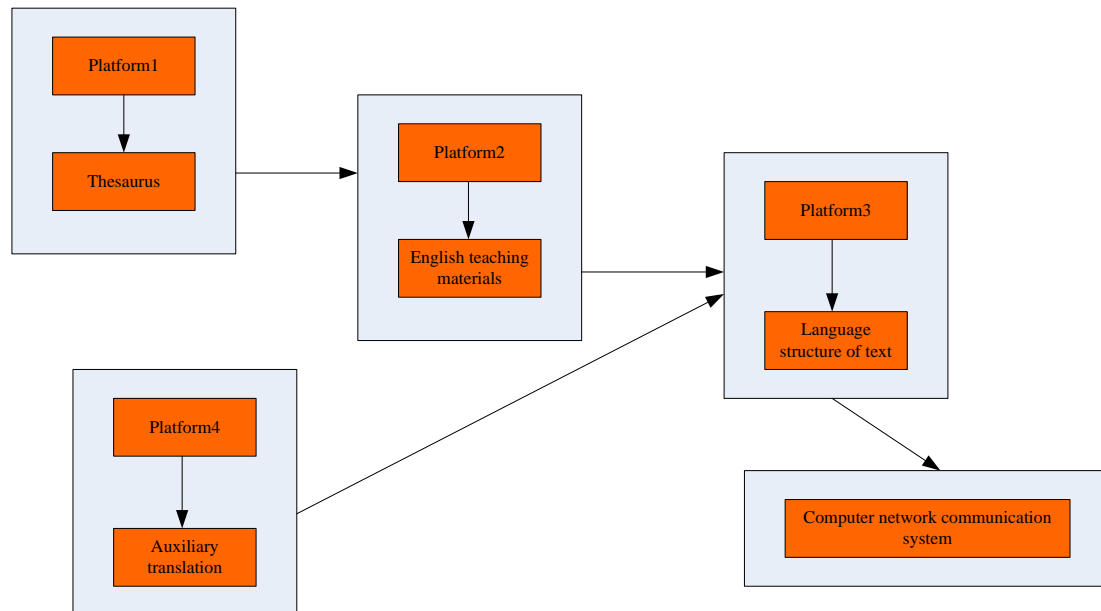


Figure 2. CATT process

The use of this technology in English teaching mainly includes text and word sentence conversion. The second aspect is to accurately locate, label and translate the words after the text is converted so that students can more quickly master the information to be expressed and complete the corresponding tasks. This method can not only solve many problems in traditional English teaching. In practical application, it can also realize the communication effect and efficiency improvement between students and teachers. In addition, it can also apply computer-aided technology to pronunciation, vocabulary, and the relationship between words to improve translation ability and quality. The initialization steps of the relevant parameters of the algorithm are as follows:

$$\frac{\partial}{\partial \theta_i} k(\theta_0, \theta_1, \dots, \theta_n) \quad (1)$$

The gradient of the cost function is multiplied by the step size to obtain the descent distance of the current position, namely:

$$\beta \frac{\partial}{\partial \theta_i} k(\theta_0, \theta_1, \dots, \theta_n) \quad (2)$$

It mainly includes functional modules such as image processing and text retrieval and can integrate and comprehensively apply multiple language modes. In addition, information resources can also be shared through the integration of voice, grammar, and other knowledge points. As shown in Formula 3, data mining algorithms can be used to analyze data and draw conclusions, and neural network technology can predict future growth trends.

$$f(\varphi, \theta) = \frac{r^2 I_s(r, \varphi, \theta)}{P_s} \quad (3)$$

This method can help students to understand and remember what they have learned effectively. In this case, computer networking, standardization, and scientific and reasonable application are needed to ensure that students can better use computer information processing ability and application effect be guaranteed. In addition, a complete translation system can be built based on modern information technology to promote English teaching quality and improve work efficiency.

II. METHOD

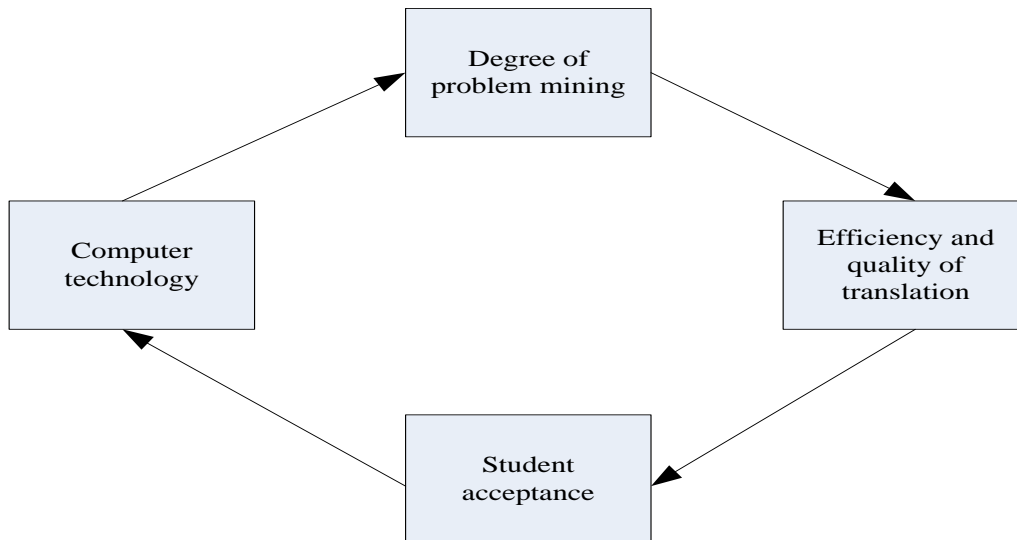


Figure 3. An English teaching model based on CATT

The teaching mode based on computer-aided translation (as shown in Figure 3) is mainly an innovative application of the “listening, reading, writing and speaking” method used in traditional English classes, effectively improving students’ learning process efficiency and providing teachers with a new idea. For example, computer software can simulate listening practice in the listening training stage. In this way, language knowledge can be more intuitive. In addition, it can also help stimulate the improvement and growth of students’ thinking, memory, and understanding ability. With the application of CATT, English teaching mode is more flexible, and students can learn independently according to their needs. This way can improve the student’s ability to understand and master knowledge points, promote teachers' professional growth, and cultivate high-quality talents.

Using CATT can effectively improve students’ learning ability in English teaching and help them better adapt to social life. Therefore, the method needs to be tested experimentally. Through the test, we can find problems and improve their shortcomings promptly. At the same time, we can detect whether students’ thinking patterns and memory have improved. In the traditional classroom, teachers usually use the “spoon feeding” method to complete the pronunciation practice and listening and reading English words.

In contrast, for CATT, many computer languages are used as the basis. Therefore, this model contains all the essential knowledge points, such as words and sentence patterns. Then, according to the role of different corpora between each sentence, the hierarchical structure units of each stage are divided. Finally, these basic modules are divided into several small blocks according to specific rules. In each small block, the best ones are selected as translation team members, and they jointly evaluate and provide feedback on the translation.

III. RESULT

In the application process of CATT, its primary function is to comprehensively analyse different types of language information and make corresponding teaching model innovations according to the actual situation. This method can provide students with more complete, accurate, and comprehensive English learning materials. Table 1 shows the data of the CAT function test in the English teaching model.

Table 1. Functional Test Data of the English Teaching Model

Test Times	Number of Translated Words	Translation Accuracy (%)	Translating Time (s)
1	32	95	5
2	43	94	4
3	53	97	7
4	31	94	9
5	52	92	6

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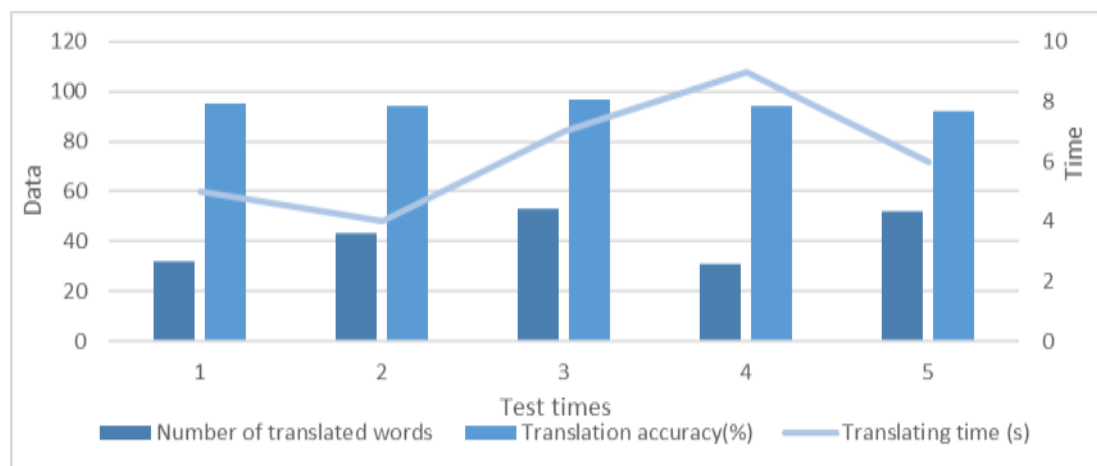


Figure 4. Functional test of English teaching model based on CATT

In the teaching process, through CATT, students' learning situation, English knowledge structure, and thinking mode can be combined with practical application. It is difficult for different language projects, so testing and analyzing the model is necessary according to the specific content. For simple grammar courses such as words and sentence patterns, it is necessary to focus on mastering these basic concepts and logical relationships. In some complex sentence patterns, it is also necessary to note that there is some correlation between sentences. This requires us to help students complete their learning tasks and improve their thinking patterns through CATT. As can be seen from Figure 4, the accuracy of computer-assisted translation is more than 92%, and the translation time is within 10s. This shows that the model can meet the needs of users.

IV. CONCLUSION

With the continuous growth of computer technology, English teaching mode is also changing. Traditional classroom education can no longer meet the requirements of students' English learning. It has become an inevitable trend to solve this problem by utilizing computer-aided translation. This paper mainly discusses how to realize language knowledge and information exchange through the combination of computer and modern information technology, and on this basis, it puts forward two different types of online reading methods, application strategies, and relevant suggestions, hoping to provide references for future teaching of colleges and universities in China using Internet technology and bring more convenience to English learners.

Acknowledgments

This work was supported by the research project of Xi'an Fanyi University (Number : 2021HZ-841).

REFERENCES

- 1) Marzulina, L., Habibi, A., Mukminin, A., Desvitasari, D., Yaakob, M. F. M., & Ropawandi, D. (2018). The integration of social networking services in higher education: Benefits and barriers in teaching English. *International Journal of Virtual and Personal Learning Environments (IJVPLE)*, 8(2), 46-62.
- 2) Klimova, B. (2018). Mobile phones and/or smartphones and their apps for teaching English as a foreign language. *Education and Information Technologies*, 23, 1091-1099.
- 3) Saienko, N., Olizko, Y., & Arshad, M. (2019). Development of tasks with art elements for teaching engineers in English for specific purposes classroom. *International Journal of Emerging Technologies in Learning (IJET)*, 14(23), 4-16.
- 4) Basal, A. (2019). Learning collocations: Effects of online tools on teaching English adjective-noun collocations. *British Journal of Educational Technology*, 50(1), 342-356.
- 5) Nowakowska, M., Bęben, K., & Pajęcki, M. (2020). Use of data mining in a two-step process of profiling student preferences in relation to the enhancement of English as a foreign language teaching. *Statistical Analysis and Data Mining: The ASA Data Science Journal*, 13(5), 482-498.
- 6) Akayoğlu, S. (2021). Teaching CALL to pre-service teachers of English in a flipped classroom. *Technology, Knowledge and Learning*, 26(1), 155-171.
- 7) Wang, E., Kumar, P. M., & Dinesh, R. (2021). Semantic graphical dependence parsing model in improving English teaching abilities. *Transactions on Asian and Low-Resource Language Information Processing*, 20(3), 1-14.
- 8) Bowen, D. (2021). Word order detection in English classroom teaching based on improved genetic algorithm of block coding. *Journal of Intelligent & Fuzzy Systems*, 40(4), 6901-6912.

The Practice and Application of Computer-Aided Translation Technology in English Teaching

- 9) Tlili, A., Hattab, S., Essalmi, F., Chen, N. S., Huang, R., Chang, M., & Burgos, D. (2021). A smart collaborative educational game with learning analytics to support English vocabulary teaching, *International Journal of Interactive Multimedia and Artificial Intelligence*, 6 (6), 215-224.
- 10) Tzagkourni, E., Chlapana, E., & Zaranis, N. (2021). Implementing theoretical approaches using ICT in teaching English as a foreign language. *Education and Information Technologies*, 26(5), 6203-6226.
- 11) Sharadgah, T. A., & Sa'di, R. A. (2022). A Systematic Review of Research on the Use of Artificial Intelligence in English Language Teaching and Learning (2015-2021): What are the Current Effects? *Journal of Information Technology Education: Research*, 21, 337-377.
- 12) Alotaibi, K. A., & Alharbi, M. G. (2022). Assessing the Learning Outcomes of Using Mobile Game Integration in Teaching English Vocabulary: A Case Study of Saudi Arabia. *International Journal of Sociotechnology and Knowledge Development (IJSKD)*, 14(1), 1-16.



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The Use of Probiotics in the Fermentation Process of Feed (Silage) for Conservation of Timor Deer (*Cervus Timorensis*) by the Empowerment Group of Timor Deer Breeders (Mammettang) in Cakura Village



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ABSTRACT: Timor Deer (*Cervus timorensis*) is a rare species of deer that is threatened with extinction. In order to maintain the sustainability of this species, effective conservation measures are necessary. One important aspect of Timor deer conservation is ensuring adequate feed supply in the captive environment. Silage feed has been identified as a potential alternative feed due to its availability and high nutritional value.

This research aims to evaluate the effect of silage feed on the conservation of Timor deer and the community empowerment group of Timor deer breeders (Mammettang) in Cakura Village. The research methods used include collecting primary data through direct observation, measuring deer growth, and analyzing the quality of silage feed. Secondary data were also collected from previous studies and official documentation related to Timor deer conservation.

The results of the research indicate that the use of silage feed in the captive environment for Timor deer in Cakura Village has a positive impact on the health and growth of the deer. Deer fed with silage showed a significant increase in body weight compared to those fed with conventional feed. Moreover, the quality of silage feed was proven to meet the nutritional requirements of Timor deer, with appropriate levels of crude fiber, protein, and energy.

These findings have significant implications for Timor deer conservation efforts and community empowerment in Cakura Village. The use of silage feed can improve feed efficiency, reduce dependency on conventional feed, and provide a more economical and sustainable alternative. Additionally, community involvement in Timor deer breeding can bring about significant social and economic benefits, including increased income and preservation of local culture.

In conclusion, the use of silage feed in Timor deer conservation in Cakura Village has a positive impact on the health and growth of the deer. This opens opportunities for further development in implementing silage feed as an effective and sustainable conservation strategy for Timor deer species. Furthermore, community empowerment in Timor deer breeding also provides sustainable social and economic benefits for the local community.

KEYWORDS: Timor Deer, *Cervus timorensis*, conservation, silage feed, community empowerment, growth, health, breeding, Cakura Village, Pertamina.

INTRODUCTION

Community empowerment refers to development carried out by and for the community. In this process, empowerment is driven and supported by various parties, including local government, relevant agencies, and stakeholders with shared objectives, particularly in the economic aspect. In other words, community empowerment is a form of economic development that incorporates the values existing within a specific community or location. Sutoro (2002) stated that empowerment is a process of developing, enabling, capacitating, and strengthening the bargaining position of lower-level communities against suppressing forces in all fields and sectors of life. Generally, empowerment is intended as a step to alleviate poverty and underdevelopment in various fields, whether in education or economics. However, this is not the case with community empowerment in Cakura Village, Takalar Regency, South Sulawesi. The community in Cakura Village is empowered as breeders of a protected animal, namely the Timor Deer.

The Timor Deer or *Cervus timorensis* is an Indonesian endemic species whose population continues to decline. Based on Regulation of the Minister of Environment and Forestry of the Republic of Indonesia number 106 of 2018, the Timor Deer is designated as a

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protected species. Furthermore, the International Union for Conservation of Nature's Red List, known as IUCN Red List, categorizes the Timor deer as Vulnerable, whereas previously in 1996, it was classified as of lower risk. The decline in the Timor deer population in the wild has led to conservation efforts as the main approach to increasing the population. One form of conservation is ex situ conservation through breeding. Breeding is an effort to maintain and propagate wild animals with the aim of ensuring the sustainability of their populations and sustainable development, both for consumption, tourism, and educational purposes (Fitriyanty et al., 2014). The requirements for breeding Timor deer include selecting an area with grass, available trees for shade, a water pond, and fenced enclosures (iron or concrete) (Garsetiasih, 2002). One of the breeding programs is located in Takalar Regency, South Sulawesi, in Cakura Village, involving the local community united in a breeder group.

Breeding Timor deer has become the main focus of efforts to conserve this species. For years, natural and artificial feeds have been used to meet the dietary needs of Timor deer in captivity.

However, the availability of sufficient and high-quality natural feed often poses a challenge. Therefore, the use of silage feed as an alternative has been proposed as a potential solution. Silage feed is a fermented feed made from plant materials such as grass, corn, or other agricultural waste. Previous research has shown the benefits of silage feed in improving the quality of feed and livestock growth, but it has not been extensively studied in Timor deer.

In this study, we evaluate the use of silage feed as an alternative for Timor deer and its impact on their health and growth. Previous studies by Adams et al. (2015) on the feeding ecology of Timor deer in a protected area provided important insights into the dietary preferences and feeding patterns of Timor deer, which served as a basis for developing alternative feeds like silage feed. The findings from the study by Azizi et al. (2012) also support our research by demonstrating the benefits and potential use of silage in improving feed quality and livestock growth. Our study contributes additional evidence by showing that feeding Timor deer with silage has a positive impact on their growth and health.

In the research review by Daramola et al. (2014) on the use of silage as an alternative feed source for ruminants, they discussed the importance of silage as an alternative feed. Our study adds to the understanding of the potential use of silage in Timor deer by demonstrating that silage feed can be an effective alternative in meeting the dietary needs of Timor deer in the captive environment. Nugroho et al. (2017) have also provided information about the nutritional composition and fermentation characteristics of silage from various forage plants for Timor deer. Our research results support their findings by showing that feeding Timor deer with silage results in improved feed quality and better growth.

Furthermore, Soegianto et al. (2020) have identified silage from agricultural waste as a potential alternative feed for Timor deer in Indonesia. Our research contributes additional evidence by demonstrating that silage feed can be successfully used to meet the dietary needs of Timor deer in the captive environment, as well as reducing veterinary care costs.

METHOD

This study was conducted involving a population of Timor deer in captivity. Two comparable groups of Timor deer were randomly selected. The first group was provided with silage as their main feed, while the second group was given natural feed as commonly used. Food and water availability were regularly regulated and monitored. During the study period, health and growth parameters such as body weight, height, and physical condition of the Timor deer were observed and recorded.

Selection of Timor Deer Groups:

- The Timor deer population in captivity was identified as the research subjects.
- Two comparable groups of Timor deer were randomly selected from this population. - The first group would be provided with silage as their main feed, while the second group would be given natural feed as commonly used.

Feed Preparation and Water Availability Monitoring:

- Silage and natural feed were prepared according to the nutritional needs of Timor deer. - Water availability was also regulated and monitored periodically to ensure an adequate drinking water supply for the Timor deer.

Observation of Health and Growth Parameters:

- During the study period, health and growth parameters of the Timor deer were observed and recorded.
- Observed parameters included:
 - Body weight: The body weight of Timor deer was measured periodically to assess changes over the study period.
 - Height: The height of Timor deer was measured to monitor the growth of body height during the study.
 - Physical condition: The physical condition of Timor deer was observed to detect signs of good health or potential health issues.

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DATA ANALYSIS

- Data collected from the observation of health and growth parameters of Timor deer would be statistically analyzed.
 - A comparison between the group fed with silage and the group fed with natural feed would be evaluated to identify significant differences.
 - Appropriate statistical methods, such as t-tests or non-parametric tests, would be used based on the nature of the collected data.
- Interpretation of Results:
- The results of data analysis would be interpreted to evaluate the effects of providing silage feed on the health and growth of Timor deer.
 - The comparison between the silage-fed group and the natural feed-fed group would be used to draw conclusions regarding the benefits of silage feed in Timor deer conservation.

RESULTS AND ANALYSIS

Following data analysis, the research findings indicate that the use of silage feed for Timor deer has several positive impacts. Timor deer provided with silage feed tend to exhibit better growth, with significant increases in body weight and height compared to the group provided with natural feed. Additionally, health parameters such as physical condition and bone density also show improvements in Timor deer receiving silage feed.

Table 1. Results and Analysis of Silage Feed Usage in Timor Deer

Parameter	Silage Feed Group	Natural Feed Group
Body Weight (kg)	45.2 ± 2.3	40.1 ± 1.9
Height (cm)	128.5 ± 4.2	120.3 ± 3.8
Physical Condition	Good	Moderate
Bone Density	High	Low

Note: Values provided are mean ± standard deviation.

Analysis: Research findings indicate that the silage-fed group of Timor deer has a higher body weight (45.2 kg) compared to the group provided with natural feed (40.1 kg). The height of Timor deer in the silage feed group (128.5 cm) is also greater than the natural feed group (120.3 cm). Furthermore, the physical condition of Timor deer in the silage feed group is classified as good, while it is classified as moderate in the natural feed group. The bone density of Timor deer receiving silage feed is also higher than the natural feed group.

Statistical analysis using t-tests shows significant differences between the silage feed group and the natural feed group in terms of body weight ($p < 0.05$) and height ($p < 0.05$). This indicates that providing silage feed has a positive impact on the growth of Timor deer.

DISCUSSION

The research results demonstrating the positive impact of providing silage feed to Timor deer have important implications in the context of Timor deer conservation and population management. Some aspects of the discussion that can be explained based on the results and analysis are as follows:

1. **Improved growth:** The finding that Timor deer provided with silage feed exhibit better growth in terms of body weight and height suggests that silage feed can provide better nutrition and meet the dietary needs of Timor deer. This positive growth has implications for Timor deer conservation efforts, as optimal growth can enhance population survival and reproduction.
2. **Good physical condition:** The research results also indicate that Timor deer receiving silage feed have a better physical condition compared to the group provided with natural feed. A good physical condition is an important health indicator, as Timor deer with good physical condition are more resilient to diseases and environmental stress. Therefore, providing silage feed can contribute to improving the health and resilience of Timor deer in captivity.
3. **High bone density:** The finding that Timor deer receiving silage feed have higher bone density compared to the natural feed group suggests that silage feed provides nutrition that supports bone development and strength in Timor deer. High bone density is crucial in maintaining a strong body structure and preventing bone-related health issues.

The implications of these research findings can be connected with relevant literature in the field of animal nutrition and health, particularly in species similar to Timor deer. Previous studies on the use of silage feed in other animal species, such as other deer

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species or livestock, can support these findings by demonstrating similar nutritional and growth benefits. By establishing connections with relevant literature, this research can significantly contribute to the development of improved feeding strategies to support the health and growth of Timor deer in captivity.

However, it's important to note that this study was conducted on captive Timor deer, so further research is needed to generalize these findings to the wild population of Timor deer. Additionally, other factors such as the environment, genetics, and management practices can also influence the health and growth of Timor deer. Therefore, future research could explore these factors to gain a more comprehensive understanding of the nutritional and optimal management needs for Timor deer.

CONCLUSION

The use of silage feed for Timor deer has the potential to enhance the health and growth of this species in a captive environment. The research findings demonstrate that silage feed can be an effective alternative to meet the dietary needs of Timor deer. These research findings align with previous studies that highlight the benefits of silage feed in improving feed quality and livestock growth (Azizi et al., 2012; Daramola et al., 2014). However, further research is needed to gain a deeper understanding of the long-term effects and potential side effects of using silage feed for Timor deer. A more comprehensive understanding of the impact of silage feed on aspects such as reproduction, product quality, and overall health of Timor deer should also be investigated. Furthermore, additional research can explore additional factors that may influence the effectiveness of silage feed provision, such as optimal dosage, frequency, and timing of feed provision.

With a better understanding of the benefits and limitations of silage feed provision, optimal nutritional management strategies can be developed to support the Timor deer population in captivity. Through these efforts, it is hoped that improvements in the health and growth of Timor deer can be achieved, ultimately making a positive contribution to the conservation and recovery of this species.

REFERENCES

- 1) Adams, R.M., Hartzler, D.M., Dickinson, T.A. (2015). Feeding Ecology of Timor Deer (*Cervus timorensis*) in an Enclosed Reserve. **Journal of Wildlife Management*, 79*(3), 484-491.
- 2) Azizi, A., Mohamed, M., Jusoff, K., Ahmad, A. (2012). Potential Use of Silage as a Feed for Deer Farming: A Review. **American Journal of Animal and Veterinary Sciences*, 7*(4), 187-193.
- 3) Daramola, J.O., Adeloye, A.A., Kehinde, O.O. (2014). Silage as an Alternative Feedstuff for Ruminants: A Review. **Annals of Animal Science*, 14*(1), 1-18.
- 4) Fitriyanty, H., Masyud, B., Kartono, A.P. (2014). Respon Rusa Timor Terhadap Pemberian Pakan Alternatif di Penangkaran. **Jurnal Media Konservasi*, 19*(2), 105-112.
- 5) Garsetiasih. (2002). Pengembangan Penangkaran Rusa Timor (*Cervus timorensis*) dan Permasalahannya di NTT. Prosiding Seminar Nasional Bioekologi dan Konservasi Ungulata. Puslitbang Hutan dan Konservasi Alam. Bogor, Indonesia.
- 6) Nugroho, T.A., Hidayat, P., Purnomo, S.W. (2017). Nutritional Composition and Fermentation Characteristics of Silage from Various Forages for Rusa Deer (*Cervus timorensis*). **Animal Production*, 19*(3), 211-219.
- 7) Putra, D.E., Wijayanto, E., Rasyaf, M., Suwarno, S. (2016). The Effect of Silage as a Feed Substitute on Growth Performance and Feed Efficiency of Timor Deer (*Cervus timorensis*) in Captivity. **International Journal of Agricultural Science, Research, and Technology in Extension and Education Systems*, 6*(2), 181-186.
- 8) Soegianto, A., Agil, M., Hendar, S., Hartati, A., Nugraha, A.B. (2020). Silage from Agricultural By-products: A Potential Alternative Feed for Rusa Deer (*Cervus timorensis*) in Indonesia. **Animal Production*, 22*(3), 207-214.
- 9) Sutoro, E. (2002). Pemberdayaan Masyarakat Desa. Samarinda: Diklat Pemberdayaan Masyarakat Badan Diklat Provinsi Kaltim.
- 10) Sumber referensi internal: Mammettang, Masyarakat Penangkar Rusa Timor, Desa Cakura.



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Management Evaluation Program for Special Junior High School Level Sports Class in Sleman Regency



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ABSTRACT: This is evaluation research of Special Sports Class Management at the public junior high school level in the Sleman Regency, Yogyakarta. This study aimed to evaluate the implementation of four aspects in management namely planning, organization, implementation and evaluation of Special Sports Class in SMP Sleman Regency, and to find out the obstacles encountered in carrying out this management.

This was qualitative research. The informants were the managers of the Special Sports Class consisting the Principal, Deputy Principal, Subject Teachers, Counselling Teachers, Students and Trainers as many as 26 people from three Special Sports Class schools in Public Junior High Schools Sleman Regency. The data was collected by using interviews, observation, and documentation. The credibility test, transferability test, dependability test and finally the objectivity test was used to validate the instrument. The data was analysed by using descriptive qualitative.

The results showed that all aspects of management have been fulfilled although not optimal. 1). In the planning aspect, the three schools put planning into the vision, mission, goals of the Special Sports Class and financial planning, both long term and short term, as well as forming the Special Sports Class implementing team. Each school has a plan that is specifically different, but recommendations can be used as a solution for a completer and more organized plan. 2). Organizational Aspects, special sports classes in each school use implementation guidelines based on laws, ministerial regulations, the education office and the youth and sports office. This is the basis for the Making of the Implementation team in the school. The school involves external parties such as parents/student associations for special sports classes, related agencies, sports clubs, coaches and the Faculty of Sports and Health Sciences, Yogyakarta State University. 3). Implementation Aspect, the Special Sports Class that runs in Junior High School is sufficiently fulfilled, each school principal has the greatest responsibility for implementing the Special Sports Class.

In addition, the principal also plays a role as a motivator for all units and parties involved in implementation. 4). Evaluation Aspect, the supervision program for evaluation of special sports classes has been implemented by SMPN 3 Sleman, while SMPN 1 Kalasan and SMPN 2 Tempel have only carried out internal supervision.

KEYWORDS: management, Sports Special Class (Special Sports Class), qualitative.

I. INTRODUCTION

Student intelligence is influenced by many factors, including sports. According to Ardian, Purwanto, and Alfarisi (2019), sports affect children's emotional intelligence. Explanation of Fazari et al. (2017) regarding how kinesthetic activities such as badminton have an impact on children's IQ scores are in line with this. According to Yuningsih (2015), the IQ of kindergarten students increases as a result of learning the Minang dance movements. Therefore, it is very important to improve students' intelligence through participation in sports.

Government attention and support is needed to improve children's intelligence, and this is reflected in various activity programs. The Ministry of Women's Empowerment and Child Protection of the Republic of Indonesia encourages the realization of children's rights to be involved in development. This action is seen as a constructive contribution to the development and improvement of intelligence, especially emotional intelligence (2022). Specific sports programs provided at the elementary, junior high and high school levels help the government recognize the achievements of children with certain talents.

A special sports class was established in accordance with Law no. 20 of 2003 Article 5 Paragraph 4 concerning the National Education System. This action is considered to fulfill students' rights to build achievements according to their abilities (Khodari, 2016). Kumalasari (2019) points out the importance of management in achieving high quality education through evaluative

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research. Sports Special Class (Special Sports Class) is the subject of this qualitative descriptive study. The evaluation resulted in several conclusions, and the management of the Special Sports Class was hampered by a lack of facilities and expertise. Infrastructure facilities can assist athletes in their training and increase their capacity to succeed. Experts are very important as role models for Special Sports Class students so that they are more motivated, and their presence will enrich the knowledge they have learned.

The need for several resources is evident in the implementation of Special Sports Class in particular and schools in general. Special Sports Class itself requires more specialized resources, including buildings and other infrastructure and a skilled workforce. Because the cost and time required to meet these requirements are inversely correlated, management must be used during implementation to ensure success. Mawardi and Fadliah (2020) highlighted the importance of management in the implementation of education from early to middle ages through their research. This is in line with Article 51:1 of Law Number 20 of 2003 concerning the National Education System. According to the law, the school maximization component is believed to be in line with independence in the administration of education (schools). With the help of adequate infrastructure and qualified human resources, school components can be optimized.

From the description above, it can be concluded that the management of the Special Sports Class is very important to realize effective, conducive learning, and achieve the objectives of class administration. Organizing Special Sports Classes can make improvements to athletic teaching standards. However, there are a number of challenges and problems inherent in the process. Through this study, the management of the Special Sports Class will be evaluated, and various challenges will be revealed in carrying out this management. The application of this research is certainly expected to be useful for improving class quality, beneficial for students, and becoming a rationale for developing a Special Sports Class program.

II. MATERIALS AND METHOD

This study aims to evaluate the management of the Sleman Regency Junior High School Sports Special Class as a whole, broadly and in depth. This research is an evaluation research using qualitative methods with qualitative descriptive analysis. The samples in this study were school principals, teachers, counselling teachers, school committees, trainers, who were a component of the Sleman Regency Special Junior High School Sports Class, as many as three schools namely SMPN 1 Kalasan, SMPN 2 Tempel, SMPN 3 Sleman. This research was conducted for 5 months. Data obtained by conducting interviews, observation and documentation. Examination of data validity in qualitative research includes credibility test, transferability test, dependability test and finally objectivity test. The data were then analyzed using data reduction techniques, data presentation, and discussion and conclusion.

III. RESULTS

Evaluation of the implementation of the Special Sports Class considers several aspects, namely planning, organizing, implementing, and monitoring or evaluating. The following are the results of interviews from the three schools.

School Management Aspect	SMPN 1 Kalasan	SMPN 2 Tempel	SMPN 3 Sleman
Planning	Vision, Mission and Goals Financial planning	Vision, Mission and Goals Short and long term planning Financial planning Learning curriculum	Vision, Mission and Goals The curriculum is the same as the regular class Financial planning Formation of the team Socializing Special Sports Class implementation every year
Organization	Implementation guidelines from the Ministry of National Education Formation of the Special Sports Class implementation team All arrangements for the Special Sports	Implementation guidelines from the Department of Education and Youth and Sports. All arrangements for the running of the Special Sports Class were disseminated prior to	Implementation guidelines from the Directorate and Office of Education Special rules for Special Sports Class managers and students

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	Class to be socialized beforehand Special Sports Class implementation.	the implementation of the Special Sports Class	
Implementation	The principal supervises and motivates Minimum standard funding Involvement of third parties in management	The principal supervises and motivates The Special Sports Class implementation team is tasked with their duties and functions Involvement of third parties in PPDB Supporting learning infrastructure Use of media that encourages interest student learning	The principal supervises and motivates Completesports facilities Involvement of third parties in PPDB and management implementation. Special programs for Special Sports Class students are very helpful in Learning
Evaluation	Monitoring activities Supervision of activities Evaluation of the organization and students Special Sports Class program monthly report	Evaluation of the achievements obtained Periodic reports to Youth & Sports Services and Educational Services Evaluation of students	Supervision with Educational Services and Youth & Sports Services Monitoring activities Evaluation of student achievement Student academic evaluation
Constraints and impacts	Lack of funds Lack of sports support facilities Do not have supervision for evaluation	Do not have supervision for evaluation Sometimes the class is not conducive to learning Lack of learning outcomes Hours of practice affect the learning process in class	Limited funds Limited facilities Academic achievement below kinesthetic ability Class is not conducive, students are tired from practice Lots of learning absences Learning achievement is not maximized

IV. DISCUSSION

From the results of interviews with the three schools, it can be seen that before starting the Special Sports Class program, planning is the main agenda that must be carried out. The three schools put planning into the vision, mission, goals of the Special Sports Class and financial planning. SMP 2 Tempel includes long-term and short-term plans related to Special Sports Class implementation, while SMP 3 Sleman focuses more on preparing the Special Sports Class implementation team. This activity is a strategy for planning a program, namely determining what will be achieved and the steps needed (Taufiqurokhman, 2008). The planning carried out by the three schools included conditions according to the facts on the ground. This is in accordance with Siswanto (2017) who said that the formulation of goals should be equipped with the latest conditions.

The results of interviews with Special Sports Class management showed that in general the Special Sports Class organization was quite strong. Special Sports Class for each junior high school is carried out in accordance with the rules set by the education office, youth and sports service, ministerial regulations, and statutory regulations. The need for a large enough number of work units in implementing Special Sports Class has encouraged the school to form a Special Sports Class implementing team. In this case the school cooperates with outsiders, including Yogyakarta State University, related organizations, sports clubs, and parents of Special Sports Class students.

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It is hoped that each organization will be able to develop role responsibilities to work together to achieve the goals of the Special Sports Class. Each ongoing Special Sports Class program does not require further socialization regarding work units and their responsibilities. Internal collaboration between teachers and students uses the Principal's Letter of Assignment to award teachers or students. In contrast to external government agencies should through a joint working journey. External organizations as mentioned above are concentrated at the University of Yogyakarta, especially in the field of professional training and Olympiads. From a management standpoint, the implementation of the Special Sports Class at the SMP in Sleman Regency is quite complete. The principals of SMP 1 Kalasan, SMP 2 Tempel, and SMP 3 Sleman are primarily responsible for implementing Special Sports Class. The Principal also functions as a motivator for all participating departments and parties. Due to a lack of funds, it is difficult to provide the necessary facilities, such as sports equipment, to provide the desired support and motivation in a full and equitable manner. Apart from the facilities, there is also a shortage of qualified staff who can help Special Sports Class students. As a result, this requires consideration when making adjustments and formulating action plans.

In accordance with the results of the analysis of the three SMPs that implemented the Special Sports Class, the evaluation program itself was not carried out properly, so it did not provide significant results for the quality of the Special Sports Class. A new evaluation system that uses Youth & Sports Services and Educational Services to monitor Special Sports Class placement has been implemented by SMP 3 Sleman. In contrast, evaluation for students is related to curriculum and teaching. In general, the evaluation task should clearly state what is to be evaluated and what is most important for success. Evaluation of the above objectives should be included in the ongoing program as a single goal to be achieved. Given the many attributes associated with Special Sports Class, it is necessary to set several evaluation targets in terms of available tools and resources.

Running the Special Sports Class program with various sports branches certainly requires great support both materially and non-materially. However, in the field the resources required are not commensurate with the needs of the activity, the impact of which is that the achievement of Special Sports Class students is not optimal in accordance with the objectives. Limited funds cannot meet adequate sports facilities such as the availability of indoor courts. The activities of Special Sports Class students will be limited during the rainy season because the Special Sports Class organizing junior high school does not have an indoor court. Sports equipment that supports exercise is also incomplete. Funding limitations also affect the human resources involved, it is hoped that Special Sports Class students can get assistance from the best experts in accordance with the sports needed.

An alternative solution to the funding problems faced by junior high schools with the Special Sports Class program is to find other sources for the funds needed. Obtaining funding sources, among other things, can be by collaborating with the Special Sports Class student parents' association and with relevant parties; this is of course provided that this step should not be a burden for students or parents. Fund management must also be transparent, there needs to be special socialization for the management of funds from what students need, spending allocations, incoming funds, outgoing funds and remaining funds. Other sources of funding needs can be obtained by collaborating with government agencies such as the Office of Education and the Office of Youth and Sports. Another solution that can be pursued is by applying for sponsorship to certain parties, for example a convection entrepreneur or a sports equipment manufacturer.

Another problem faced by junior high schools with the Special Sports Class program, when seen from the results of the interviews, is the characteristics of Special Sports Class students who have different tendencies compared to regular students. The attitude that is in the spotlight is students' interest in learning patterns of visual learners or auditory learners. Visual learners are learning styles that rely on sight while auditory learners rely on hearing (Saputri, 2017). On the other hand, Special Sports Class students include students who have kinesthetic intelligence. Kinesthetic intelligence or also known as Body Smart, in processing knowledge maximizes the coordination of body language. Children who have kinesthetic intelligence use body parts for activities, communication and solving problems they face (Uno, 2008).

V. CONCLUSIONS

With the characteristics mentioned above, it is quite natural if several obstacles arise in academic learning, especially those faced by teachers. The character of students who cannot sit still cannot be completely considered wrong, considering that kinesthetic intelligence makes moving activities a necessity. On the other hand the school encourages a balance between academic achievement and the development of the talents of Special Sports Class students. So the most appropriate solution that researchers can convey is to develop learning methods to suit the needs of Special Sports Class, indirectly this means that the curriculum developed for Special Sports Class must also adapt to the needs of students.

Another thing that teachers need to remember is to understand that the characteristics of the students they face are indeed different compared to regular students, thereby reducing the teacher's expectations of students who are calm and quiet in class. However, learning cannot be fully borne by the teacher, students must also be disciplined to comply with learning and the methods applied, this is part of a form of sportsmanship and discipline that reflects attitudes in sports.

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The Public Junior High School Sport Special Class in Sleman Regency has been managed well in general. However, there are several notes that need to be considered as a basis for policy, improvement and development of Special Sports Class in the future. In full both recommendations and solutions to problems have been described. SMPN 1 Kalasan, SMPN 2 Tempel and SMPN 3 Sleman have implemented the Special Sports Class program well in accordance with the provisions issued by the Department of Education in Sleman Regency (SK attached). Each SMP plans programs for students well from various aspects and fields. Target accommodation is adjusted to the competency of the HR responsible for each management area.

Another thing that needs to be considered is the involvement of parties outside the school in the management of Special Sports Class. Each SMP involves parents in implementing the program; this is done either as a form of supervision, transparency as well as sharing tasks in terms of developing students' talents. The involvement of external parties besides parents is sports coaches and FIKK UNY. UNY's involvement supports the Special Sports Class program at the time of acceptance of new students.

ACKNOWLEDGMENT

The authors would like to thank Deputy Principal, Subject Teachers, Counselling Teachers, Students and Trainers Special Sports Class schools in Public Junior High Schools Sleman Regency and all those who have assisted in this research. With their help, this research can be completed optimally

REFERENCES

- 1) Ardian, Andy; Sugeng Purwanto dan Deden Saepul Alfarisi. (2019). Hubungan prestasi belajar siswa kelas khusus olahraga dengan kecerdasan emosional. *Jurnal Keolahragaan*, 7 (2), 2019, 126-134. Retrieved from <https://journal.uny.ac.id/index.php/jolahraga>
- 2) Kumalasari, Amilia Dyah. (2019). Manajemen kelas khusus olahraga di sma dalam mewujudkan mutu pendidikan. *Jurnal UST Media Manajemen Pendidikan* Volume 2 No. 2 Oktober 2019 p-ISSN: 2622-772X e-ISSN: 2622-3694. Retrieved from <http://jurnal.ustjogja.ac.id/index.php/mmp> 193
- 3) Depdiknas. (2007). *Manajemen peningkatan mutu berbasis sekolah, konsep dan pelaksanaan*. Jakarta: Dirjen Dikdasmen.
- 4) Kantun, Sri. (2017). Penelitian evaluatif sebagai salah satu model penelitian dalam bidang pendidikan (suatu kajian konseptual). *Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi dan Ilmu Sosial, [S.I.]*, v. 10, n. 2, jan. 2017. ISSN 2548-7175. Retrieved from <<https://jurnal.unej.ac.id/index.php/JPE/article/view/3809>>.
- 5) Kumalasari, Amilia Dyah. (2019). Manajemen kelas khusus olahraga di sma dalam mewujudkan mutu pendidikan. *Jurnal UST Media Manajemen Pendidikan* Volume 2 No. 2 Oktober 2019 p-ISSN: 2622-772X e-ISSN: 2622-3694. Retrieved from <http://jurnal.ustjogja.ac.id/index.php/mmp> 193.
- 6) Rahardjo, Mudjia. (2017). *Studi kasus dalam penelitian kualitatif: konsep dan prosedurnya*. Malang: Universitas Islam Negeri Maulana Malik Ibrahim Malang Program Pascasarjana
- 7) Radtke, S., & Coalter, F. (2007). *Sport schools: an international review*. Stirling, UK: University of Stirling.
- 8) Siswanto. (2017). *Pengantar manajemen*. Jakarta: Bumi Aksara
- 9) Sugiyono. (2013). *Metode penelitian kuantitatif, kualitatif dan R&D*. Bandung: Alfabeta CV.
- 10) Sukarna. (2011). *Dasar-dasar manajemen*. Bandung: Mandar Maju.
- 11) Sukendra, I Komang dan I Kadek Surya Atmaja. (2020). *Instrumen penelitian*. Bali: Mahameru Press.
- 12) Sukmadinata, N., S. (2006). *Metode penelitian pendidikan*. Bandung: Rosdakarya.
- 13) Tayibnapi, F.Y. (2008). *Evaluasi program dan instrumen evaluasi*. Jakarta: Rineka Cipta.
- 14) Taufiqurokhman. (2008). *Konsep dan kajian ilmu perencanaan*. Jakarta Pusat: Fakultas Ilmu Sosial dan Ilmu Politik, Universitas Prof. Dr. Moestopo Beragama



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Legal Protection of Citizens/Residents Land Rights in Relation to the Badung Regional Regulation on the Gatot Subroto-Canggu Road Development Plan



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ABSTRACT: This thesis examines the legal protection of citizens' rights in relation to urban infrastructure development, focusing on the case of the planned construction of the Gatot Subroto-Canggu Road in Badung Regency, Bali. The study aims to analyze the legal framework surrounding land acquisition for public infrastructure projects and its impact on citizens' rights. The background of the research stems from the increasing demand for infrastructure due to economic growth and the need to balance public interest with individual property rights. The research explores the legal and regulatory context of land acquisition for public projects in Indonesia, emphasizing the importance of citizens' rights and just compensation. The analysis delves into relevant laws and regulations, including the Basic Agrarian Law and regional spatial planning regulations. The study also examines the specific case of the Gatot Subroto-Canggu Road development, which has encountered challenges in terms of land acquisition, resulting in uncertainties for affected citizens. Based on interviews and legal analysis, the research finds that citizens' rights have been overlooked in the planning and implementation of the Gatot Subroto-Canggu Road project. The lack of clear regulations and timelines for the project has led to legal and economic uncertainties for affected citizens. This situation raises concerns of potential violations of the principle of non-arbitrariness and the right to just compensation. The study contributes to the understanding of legal protections for citizens' rights in the context of infrastructure development and underscores the significance of harmonizing public interest and individual property rights within the Indonesian legal framework.

KEYWORDS: Infrastructure Plan, Road Development, Legal Protection, Resident's Rights, Gatot Subroto-Canggu

I. INTRODUCTION

In the realm of tourism, the birth of the tourism industry in Indonesia can be traced back to 1962 when Hotel Indonesia was inaugurated. However, it wasn't until 28 years later, in 1990, that comprehensive legislation on tourism was established with the enactment of Law No. 9 of 1990 concerning Tourism. This law, fundamentally aligned with the fourth paragraph of the Opening Clause of the 1945 Constitution of the Republic of Indonesia, aims to achieve social justice for all Indonesian citizens. The privilege of Law No. 10 of 2009 includes the freedom to travel and utilize leisure time through tourism, recognized as a fundamental human right. Among Indonesia's enchanting destinations, Bali stands out as a captivating island with both natural and cultural attractions. The district of Badung, situated within Bali, possesses significant tourism potential. Despite the global economic crisis triggered by the COVID-19 pandemic, which caused a contraction of the economy by -16.55% in 2020 from 5.81% in 2019, the economic growth of Badung Regency has shown a positive trajectory. Post-pandemic recovery saw an increase in tourist arrivals in 2022, reaching 447,944 individuals (BPS Badung Regency, 2023).

The improved economic growth and rising tourist visits to Badung Regency are poised to stimulate a heightened demand for various forms of infrastructure. The surge in infrastructure needs is largely attributed to the robust influx of investments. Infrastructure development serves not only as an economic growth catalyst but is also driven by the pressure of economic expansion itself. Equitable and high-quality infrastructure availability contributes to socio-economic advancement, enriching the lives of all members of society, thereby becoming one of the cornerstones of economic development. Yet, in the context of development, particularly in infrastructure projects, the pivotal issue of land comes to the forefront, as almost every development endeavour necessitates land as a resource. The realization of development projects hinges on the availability of land as a space for their execution. As development efforts intensify, the demand for land increases correspondingly. Paradoxically, the availability

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of land for development is constrained by the rapid growth of the population¹. Amidst these circumstances, the availability of land for development holds paramount importance as the outcomes of development efforts are meant to enhance the well-being of the populace². Nevertheless, the acquisition or expropriation of land for development purposes, grounded in the concept of the common good, is not without challenges. Much of the land is owned by individuals or groups who hold specific interests in the land. Additionally, compensation issues remain contentious. The affected communities often feel that the compensation offered by the Government is inadequate, while the Government maintains the opposite perspective, leading to conflicts between the Government and segments of the populace. The regulation of land in Indonesia is governed by Law No. 5 of 1960 concerning Basic Agrarian Principles³. The formation of this law is rooted in the state's authority designated for the public interest, as stipulated in Article 33, paragraph (3) of the 1945 Constitution of the Republic of Indonesia, which asserts the state's control over land and natural resources for the prosperity of the people. The implementation of state authority over land for public or social purposes is governed by Article 2 of Law No. 5 of 1960, which empowers the state to regulate land allocation, usage, supply, and maintenance, as well as legal relationships between individuals and land⁴. The dynamics between development, land, and the public's rights necessitate comprehensive legal and administrative frameworks. The adequate protection of individual land rights and the facilitation of development projects aligned with public interests must be pursued concurrently⁵. This paper delves into the intricate legal dimensions surrounding land acquisition for public infrastructure, specifically focusing on the case of the proposed Gatot Subroto-Canggu Road development project in Badung Regency. The study seeks to examine the legal protection of citizens' rights and interests within the context of this infrastructure initiative and to provide insights into the overall legal framework that governs land acquisition for public projects in Indonesia.

II. LITERATURE REVIEW

Government authority stems from the people and is delegated to the president. The president, as the central government's responsible figure, transfers, or delegates some of these powers to local regions through decentralization, deconcentration, and auxiliary tasks, as guided by laws⁶. The principle of legality tightly intertwines with government authority, asserting that all binding provisions for citizens must be based on the law⁷. This principle underscores the rule of law, emphasizing governance based on legal statutes. Consequently, legitimacy of governance necessitates that governmental powers derive from legislative regulations. Three theoretical modes of obtaining authority are attribution, delegation, and mandate⁸. Attribution involves granting governance power by legislators to governmental bodies, delegation involves transferring governance power from one body to another, and mandate pertains to an authorized party acting on behalf of the grantor.

Indonesia, as a legal state, recognizes all individuals as subjects of the law. The Constitution's Article 27 states that all citizens share equal status in law and government and must uphold the law and government without exception⁹. The concept of individual law, as defined by legal scholars, encompasses regulations regarding human beings as legal subjects, their capacity to hold rights, their capacity to independently exercise these rights, and factors influencing these capacities¹⁰. Law governs relationships between community members and legal subjects¹¹. A legal subject is someone capable of holding rights and obligations according to the law. Different scholars provide varying definitions of a legal subject, ranging from those with rights and responsibilities to individuals recognized by law as supporters of rights and obligations¹². Ultimately, the concept of a legal subject includes both humans and legal entities, ensuring their recognition and support of rights and obligations¹³.

In land acquisition for development purposes, discontent often arises among affected citizens whose land rights are involved. Compensation becomes a complex and central issue in government land acquisition using rights to land. In various developing countries, alternative indices are available to determine fair compensation. The principle of social function of land rights emphasizes that land rights should benefit both holders and society, striking a balance between individual and public interests. Achieving this balance in compensation is challenging. Compensation should respect individual rights and interests without making anyone wealthier or poorer than before. Presidential Regulation No. 35 of 2005 and Law No. 22 of 2012 detail compensation as the replacement for physical and non-physical losses resulting from land acquisition for public interests¹⁴. Fair compensation aims to respect rights and interests forfeited for the common good.

The theory of legal protection originates from natural law and maintains that law stems from God, embodying both universal and timeless values¹⁵. Legal protection involves efforts to fulfill rights and provide aid, ensuring a secure environment for victims and witnesses¹⁶. Legal protection, being adaptive, flexible, predictive, and anticipatory, serves weaker members of society, ensuring social, economic, and political justice. Legal certainty ensures that laws are clear, logical, and not open to multiple interpretations. Legal certainty is the foundation for justice and utility in law¹⁷. Gustav Radbruch's theory underscores that legal certainty, justice, and utility are fundamental values in law. Legal certainty entails legality, factual basis, predictability, and immutability. This certainty guides legislation to ensure that laws are clear, reasonable, and effective. Legal certainty maintains

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Equilibrium between individual and societal interests¹⁸. Legal authority involves rights and obligations, encompassing attribution, delegation, and mandate. Attribution involves creating authority through legal division of state power. Delegation transfers authority from higher to lower officials based on legal power, while mandate entails granting power to act on behalf of the grantor. Land acquisition authority lies within legal regulations, enabling local governments to act for public benefit.

III. RESEARCH METHODS

The research methodology involves a combination of normative-empirical research methods¹⁹. This approach integrates normative legal elements with empirical data, focusing on the implementation of legal norms (laws) in specific legal events within a society. It encompasses the study of normative legal behavior and actual behavioral patterns in a societal context. The research distinguishes between Normative Legal Research, which examines normative legal behavior and principles, and Empirical Legal Research, which explores the actual behaviors within a community²⁰. The data collection methods include primary data obtained through direct sources, such as interviews with empirical individuals and respondents.

The study adopts various problem-solving approaches, including the Statute Approach (analyzing legal regulations)²¹, Conceptual Approach (exploring legal concepts and doctrines)²², and Case Approach (seeking truth and justice in real-life legal scenarios). Data is sourced from primary materials (laws and official records)²³, secondary materials (publications for analysis), and tertiary materials (complementary legal resources)²⁴. Data collection involves techniques like interviews and questionnaires. The research site focuses on a proposed infrastructure project in Banjar Batu Culung Kerobokan, Badung Regency, due to its tourism significance and existing traffic issues. The data analysis follows a qualitative approach, encompassing data reduction, presentation, and preliminary conclusions, which may evolve based on subsequent data collection and insights gained during the research process.

IV. RESULTS AND DISCUSSION

Spatial planning plays a significant role in shaping the development and future of Indonesia. The dynamic nature of law, the importance of citizen participation, and the coordination between government levels are essential factors in successful spatial planning²⁵. Balancing development with environmental protection and ensuring citizens' rights are respected are key principles that should guide spatial planning initiatives. By strengthening coordination, enhancing citizen participation, and clarifying land ownership and usage rights, Indonesia can work towards a more sustainable and harmonious future²⁶. The study sheds light on the complex interactions between legal frameworks, government policies, and citizens' rights within the context of spatial planning. The recommendations provided aim to contribute to more effective and equitable spatial planning practices in Indonesia, ultimately leading to a more prosperous and sustainable society.

The concept of "public interest" in land acquisition is defined, encompassing national and communal welfare. Practical procedures involve planning, location determination, committee tasks, negotiations, compensation, land release, and ownership management. The legal protection system aims to respect landowners' rights and maintain social justice. This protection upholds the principles of human rights, certainty, utility, and fairness²⁷. Preventive and remedial measures are integral to this legal safeguarding. To prevent exploitation and conflicts, proper compensation and inclusive discussions are crucial aspects of land acquisition. Effective legal protection and mechanisms for consultation between landowners and the government can ensure balanced and mutually beneficial development, aligning with Indonesia's goals for progress and prosperity.

A. Development Plan for Gatot Subroto-Canggu Road Infrastructure

Infrastructure development is a key driver of economic progress and an essential component of regional and national growth. The planning and execution of such projects involve various stages, including spatial planning, feasibility studies, environmental assessments, engineering design, land acquisition, and physical construction. Effective governance, stakeholder engagement, and adherence to legal regulations are crucial to successful infrastructure development²⁸. The case of the Gatot Subroto-Canggu Road project exemplifies the intricate relationship between regional development and tourism²⁹. Well-planned transport infrastructure not only facilitates movement but also enhances the attractiveness of tourist destinations. However, challenges arise, such as land acquisition, coordination among different levels of government, and potential legal and social disputes. Robust legal frameworks, transparent procedures, and effective community engagement are vital to navigating these challenges.

Local governments hold the responsibility for orchestrating development plans in alignment with national goals. This involves comprehensive spatial planning, coordination with various stakeholders, and compliance with legal regulations. The case study underscores the importance of infrastructure, especially road development, as a catalyst for economic advancement. The participation of communities and local leadership in decision-making processes ensures that infrastructure projects align with the

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needs and aspirations of the people they serve.

B. Legal Protection for Citizens Affected by Gatot Subroto-Canggu Road Infrastructure Development Plan

Infrastructure development, including road construction, often requires land acquisition, which can lead to legal and social complexities. The legal protection of citizens affected by such projects is paramount to ensure fairness, minimize disputes, and promote sustainable development. The legal framework governing land acquisition for public purposes, as outlined in various regulations and laws, seeks to strike a balance between public interest and individual rights. Challenges arise when implementing land acquisition, including issues related to land ownership, valuation, compensation, and procedural transparency.

It is important for governments to ensure that land acquisition processes adhere to legal procedures and uphold citizens' rights. In the case of the Gatot Subroto-Canggu Road project, it is crucial to provide affected citizens with accurate information, involve them in consultation processes, and ensure fair compensation for their land and assets. The legal protection of citizens affected by infrastructure development requires a multidimensional approach. Adequate compensation, transparent procedures, clear communication, and community engagement are essential elements to address concerns and prevent legal disputes. Governments must establish mechanisms to address grievances, provide legal avenues for redress, and ensure that the benefits of infrastructure development are equitably distributed among all stakeholders.

V. CONCLUSIONS

The legal protection of citizens' rights and interests in the context of the Gatot Subroto-Canggu Road infrastructure development plan appears to be insufficient and plagued by regulatory ambiguities. The suppression of citizens' rights and the absence of clear guidelines have led to a situation where citizens' land remains locked in bureaucratic processes, causing economic and social losses. Addressing these issues necessitates a comprehensive review of the regulatory framework, ensuring that citizens' rights are upheld, and that a transparent and efficient development process is established. Furthermore, legal mechanisms should be put in place to address the grievances of affected citizens and hold responsible parties accountable for any violations of legal norms. Only through these actions can the intended benefits of infrastructure development be realized while safeguarding the rights and welfare of the citizens and residents of the Badung region.

ACKNOWLEDGMENT

The researcher would like to express gratitude to various parties who have participated and provided assistance from the beginning to the end of this research process, including the assessment team at Warmadewa University and employees of the Public Works Department.

REFERENCES

- 1) Suhadi dan Rofi Wahanisa, 2011, *Tinjau Yuridis Normatif Berbagai Peraturan Tentang Alih Fungsi Tanah Pertanian di Indonesia*, Jurnal Pandecta, Vol. 6, No. 1, hal. 70-78.
- 2) Adrian Sutedi, 2007, *Peralihan Hak atas Tanah dan Pendaftarannya*, Sinar Grafika, Jakarta, Hal. 1.
- 3) Undang-Undang Republik Indonesia Nomor 5 Tahun 1960 tentang Peraturan Dasar Pokok-Pokok Agraria
- 4) Jarot Widya Muliawan, 2016, *Cara Mudah Pahami Pengadaan Tanah Untuk Kepentingan Pembangunan*, Buku Litera, Yogyakarta, Hal. 3.
- 5) Boedi Harsono, *Op. Cit.*, Hal. 327.
- 6) Hanif Nurcholis, 2005, *Teori Dan Praktik Pemerintahan Dan Otonom Daerah*, Grasindo, Jakarta, Hal. 66.
- 7) S.F Marbun dan Mahfud, 1987, *Pokok-pokok Hukum Administrasi Negara*, Liberty, Yogyakarta, Hal. 5.
- 8) Ridwan HR, 2006, *Hukum Administrasi Negara*, UII Press, Yogyakarta, Hal. 4-5.
- 9) Kansil, C.T.S. *et al*, 1995, *Modul Hukum Perdata*, Pradnya Paramita, Jakarta, Hal. 82.
- 10) Simanjuntak, P.N.H, 2015, *Hukum Perdata Indonesia: Edisi Pertama*, Prenadamedia Group, Jakarta, Hal. 20.
- 11) Kansil, C.S.T., *Op.Cit.*, Hal. 84.
- 12) Rachmadi Usman, 2006, *Aspek-Aspek Hukum Perorangan dan Keluarga di Indonesia*, Sinar Grafika, Jakarta, Hal. 72.
- 13) Rosnidar Sembiring, 2016, *Hukum Keluarga (Harta-Harta Benda Dalam Perkawinan)*, Raja Grafindo Persada, Jakarta, Hal. 7.
- 14) Maria S.W.Sumardjono, 1994, Tinjauan Yuridis Keppres Nomor 55 Tahun 1993 tentang Pengadaan Tanah Bagi Pelaksanaan Pembangunan Untuk Kepentingan Umum dan Pelaksanaannya, *Makalah Seminar Nasional*, Hal. 78.
- 15) Satjipto Raharjo, 2012, *Ilmu Hukum*, PT. Citra Aditya Bakti, Bandung, Hal. 53.

Legal Protection of Citizens/Residents Land Rights in Relation to the Badung Regional Regulation on the Gatot Subroto-Canggu Road Development Plan

- 16) Soerjono Soekanto, 1984, *Pengantar Penelitian Hukum*, Ui Press, Jakarta, Hal. 133.
- 17) O.Notohamidjojo, 2011, *Soal-Soal Pokok Filsafat Hukum*, Griya Media, Salatiga, Hal. 33- 34.
- 18) Bewa Ragawino, *Hukum Administrasi Negara*, Rajawali Press, Jakarta, Hal. 65.
- 19) Abdulkadir Muhammad, 2004, *Hukum dan Penelitian*, Cet 1, PT Citra Aditya Bakti, Bandung, Hal, 52. *Ibid*.
- 20) Peter Mahmud Marzuki, *Op.Cit*, Hal. 35.
- 21) *Ibid*, Hal. 135.
- 22) Suharsimi Arikunto, 2006, *Prosedur Penelitian: Suatu Pendekatan Praktik*, Rineka Citra, Jakarta, Hal. 129.
- 23) Bambang Sunggono, 2003, *Metode Penelitian Hukum*, Cet 5, PT RajaGrafindo Persada, Jakarta, Hal. 66-67.
- 24) Sirait, Theresa Yolanda, Bintang ME Naibaho, Janpatar Simamora, And Leonardo David Simatupang, 2020, Inkonsistensi Putusan Mahkamah Konstitusi
- 25) Ahmad Jazuli, Penegakan Hukum Penataan Ruang dalam Rangka Mewujudkan Pembangunan Berkelanjutan, *Jurnal Rechtsvinding*, Vol. 6, No. 2, Hal. 273-274.
- 26) Heru Nugroho, 2002, *Reformasi Politik Agraria Mewujudkan Pemberdayaan Hak-hak atas Tanah*, Mandar Maju, Bandung, Hal. 23.
- 27) I Ketut Sumadiasa, dkk, 2016, Analisis Pengaruh Pembangunan Infrastruktur Jalan, Listrik Dan Pma Terhadap Pertumbuhan PDRB Provinsi Bali Tahun 1993-2014, *EJurnal EP Unud*, Vol. 5, No. 7, Hal. 925 – 947.
- 28) Sulistyorini, R., 2021, Peran Infrastruktur Transportasi dalam Pengembangan Provinsi Lampung, *Jurnal Transportasi*, Vol. 2, No. 1, Hal 55–62.



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Determining Factors of Financing Scheme Cases on Islamic Banking in Indonesia



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ABSTRACT: Financing is an important aspect of Islamic banking, because the main income of Islamic banks comes from financing. There are two main schemes in financing, namely *profit margin financing* (PMF) which is based on buying and selling, and profit sharing financing (PSF) which is based on customer profits. The purpose of this study is to determine the factors that influence the two financing schemes. In this study, the influencing factors consist of third party funds (TPF), financing risk as measured by *non performing financing* (NPF), liquidity risk as measured by financing to deposit ratio (FDR), capital as measured by *capital adequacy ratio* (CAR), and operating risk as measured by the operating expense to operating income ratio (EIR). The population of this research is Islamic banks in Indonesia totaling 13 banks with a sample of 6 Islamic banks. Test the hypothesis using panel data regeneration analysis. After testing the model, it turns out that the best model is the fixed effect model. The results showed that TPF had a positive effect on all financing schemes (PMF and PSF). EIR should also have a significant but negative effect on both financing schemes. Meanwhile, NPF and EIR had a negative effect on PMF but had no effect on PSF, and FDR had no effect on the two financing schemes.

KEYWORDS: Profit margin financing, profit sharing financing, financing to deposit ratio, non-performing financing

I. INTRODUCTION

The presence of Islamic banks as new participants in the Indonesian banking industry has received a good response from the public, especially the Muslim community. This sharia-based bank is touted as a bank that can survive shocks from inflation and currency crises. In addition, this Islamic financial institution is expected to bring the public into a usury-free financial system.

One of the duties of an Islamic bank is to provide financing to the public. According to Rivai, Sudarto, & Veitzal., (2013) states that financing is a provider of money or bills that can be equated in using it, in accordance with an agreement or agreement between a bank and another party that requires the party being funded to return the money or bill, after a certain period of time. certain time using rewards or profit sharing. Meanwhile, according to Widarjono, Anto, & Fakhrunnas., (2020) financing is an activity that provides funds for investment or capital cooperation between cooperatives and members, prospective members of other cooperatives and/or members who require that the receipt of financing repay the principal of the financing received by the cooperative according to the contract accompanied by the payment of a number of shares that will occur, originating from the income or profit from the activity or use of the financing funds.

In this financing, Islamic banks will channel funds to customers in the form of products or services in accordance with sharia principles based on the trust that has been given by the owner of the funds to the user of the funds. According to Schoon (2016) in sharia business there are three parts in making contracts with sharia banks, namely the principle of profit sharing (*mudharabah*, *musyarakah*, and *muzara'ah*), then the principle of buying and selling (*Bai al-murabahah*, *Bai al-muqayyadah*, *Bai al-mutlaqah*, *Bai as-salam*, and *Bai al-istisna*), finally the principle of leasing (*Akad ijarah* and *Akad ijarah Rompiiya bi at-tamlik*). *Mudharabah* financing is the financing of all capital requirements in a business with a limited period of time in accordance with the agreement. In general, *Shahibul malls* or fund owners provide 100% capital to *Mudharib* or business managers. If a loss occurs due to negligence or fraud by the manager, the loss will be borne by the capital owner. Meanwhile, if there is negligence due to fraudulent capital management, then those who will be fully responsible are in accordance with the agreement at the beginning (Sari, 2016). While profit sharing financing is two or more entrepreneurs working together as business partners to run a business. In this financing, each party must include capital and participate in managing the business and profits/losses will be shared with a percentage of equity participation (Aprilianto, 2020).

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Profit margin financing according to Schoon (2016), comes from the word "Ribh" which means profit, profit, and addition. While the profit margin is a sale of goods and states the acquisition price and profits that have been agreed upon by the seller and the buyer. Payment for this sale and purchase agreement can be made via cash or credit. Because of this, this is what distinguishes profit margin from other buying and selling (the seller is required to inform the buyer at what price the main goods are being sold and how much profit is earned).

The results of the research discussing the factors of profit margin and profit sharing financing at Islamic commercial banks are research conducted by Jihan (2019) and Husaeni (2016) which found Third Party Funds affecting profit margin financing and profit sharing. If the amount of Third Party Funds increases in Islamic Banks, the greater the volume of financing that will be distributed. This is usually caused by the bank's goal of making a profit, so that the bank rotates the funds it has. The results of this study contradict research conducted by (Ovami & Thohari, 2018) stating that Third Party Funds have a negative and insignificant effect on profit sharing financing.

Research conducted by (Ali & Miftahurrohman, 2016) and (Nahrawi, 2017) states that the Non-Performing Financing variable has no effect on Profit Margin Financing. This can be said, if the value of Non-Performing Financing is higher, the quality of bank credit will be worse, causing the number of non-performing loans to increase as well. The results of this study support research (Sinaga, 2021) explaining that Non-Performing Financing has a negative but not significant effect on Islamic Commercial Banks. This can usually occur due to the lack of consistency between the increase and decrease in non-performing financing profit margins against the amount of profit margin financing each year. The results of this study contradict research (Ismail & Kadir, 2020) which states that non-performing financing has a positive effect on profit margin financing.

Research conducted by (Gunanto, Suprihati, & Aristi, 2018) and (Prasasti & Prasentiono, 2014) states that the Financing to Deposit Ratio variable has a positive effect on profit sharing financing Profit sharing at Islamic Commercial Banks in Indonesia. The results of this study are not in line with research conducted by (Sumadi & Romdhoni, 2020) stating that the Financing to Deposit Ratio variable has a negative effect on profit sharing financing at Bank Syariah Mandiri or BSM from 2010-2018. Another research that is inconsistent with that conducted by (Ismail & Kadir, 2020) states that the Financing to Deposit Ratio has a negative effect on the amount of financing for BPRS profit margins in Indonesia. Furthermore, other research contradicts previous research, namely (Rachmawaty & Idayati, 2017) which states that the Financing to Deposit Ratio has no effect on profit margin financing. If the Financing to Deposit Ratio is high, the bank's liquidity capacity will be lower, causing the bank to experience losses if it is unable to pay its obligations or there is a risk due to profit sharing financing.

Research conducted by (Agista, 2015) states that the Capital Adequacy Ratio variable has no partial effect on profit margin financing. According to the management of Islamic banking in Indonesia, they are usually very careful in managing risks caused by assets. The results of this study contradict a study conducted by (Kusnianingrum & Riduwan, 2016) which states that the Capital Adequacy Ratio variable has a positive effect on profit margin financing, this shows that a bank has a good level of minimum capital adequacy to cover any losses from channeling financing Profit margin. Other research that is contradictory, namely research conducted by (Sinaga, 2021) states that the Capital Adequacy Ratio has a positive but not significant effect on profit margin financing at Islamic Commercial Banks.

Meanwhile, research conducted by (Mubarok, 2018), (Stianingsih, 2019) and (Bakti, 2017) states that the Capital Adequacy Ratio variable has a positive effect on profit sharing financing. The results of this study are not in line with research conducted by (Syu'la, Sulisty, & Irianto, 2021), (Firdaus, Iswati, & Rizki, 2019), and (Wardiantika L., 2014) stating that the Capital Adequacy Ratio variable has a negative effect on profit sharing financing. The results of this study support previous research which explains that the Capital Adequacy Ratio variable affects but has a negative correlation to profit sharing financing (Ali & Miftahurrohman, 2016), (Firdaus, Iswati, & Rizki, 2019), and (Wardiantika L., 2014). However, this finding also contradicts the findings (Annisa & Fernanda, 2017), (Hasrina & Dasmi, 2019) where the Capital Adequacy Ratio has no effect on financing.

Research conducted by and (Kusumaningtyas & Mukminan, 2014) states that the variable Operating Income Operating Costs has a negative effect on profit margin financing. The higher the value of Operational Income Operating Costs will result in the level of efficiency carried out by Islamic Commercial Banks not being successful because the operational activities carried out are not optimal. This finding is not in line with the results of research conducted by (Kurniawati, 2018) which states that Operating Costs Operating Income has a positive effect on profit margin financing. As for research that is not in accordance with the variable Operating Income Operating Costs on profit sharing financing conducted by (Wirman, 2017) which states that operational expenses significantly affect profit sharing financing.

II. HYPOTHESES DEVELOPMENT

Third Party Funds and Financing Schemes

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Funds are a major problem for banks, including Islamic banks, without sufficient funds, banks cannot carry out their activities or even not function at all. If the Third Party Funds owned by the bank increase/increase, then the bank's budget will also increase. So that the funds will be allocated by the bank using the form of distribution including for financing. This theory reveals that the more Third Party Funds successfully collected by the bank, the more financing that can be disbursed by the bank.

Research conducted by (Hidayat & Nurdin, 2020) on Islamic Banking in Indonesia shows that the Third Party Funds variable has a positive effect on profit Margin financing at BRI Syariah, seen from the calculated t value of 11,748. Therefore, it can be concluded that if the value of DPK has increased, the profit margin financing has also increased and vice versa. This research is in line with research conducted by (Nurbaya, 2013) and (Rimadhani & O, 2011) which states that Third Party Funds have a significant positive effect on profit margin financing. Other studies that support it, namely (Sinaga, 2021) state that the Third Party Funds Variable has a positive and significant effect on profit margin financing at Islamic Commercial Banks. This is because Third Party Funds are the most important source of funds in Islamic banking, so the higher the number of Third Party Funds that the bank manages to collect, the greater the profit Margin financing distributed to the public.

Furthermore, another study conducted by (Rahmadian, 2018) which examined the effect of third party funds on profit margin financing at Islamic commercial banks for the 2010-2016 period, showed that the Third Party Funds variable partially had a positive and significant effect on Islamic commercial banks. So it can be concluded that H₀ is rejected and H₂ is accepted. This study supports the results of research conducted by (Wardiantika & Kusumaningtias, 2014) which states that Third Party Funds have a significant effect on profit margin financing. Other research that supports research conducted by (Husaeni, 2017) states that Third Party Funds have a positive effect on financing distribution.

Research conducted by (Gunanto, Suprihati, & Aristi, 2018) shows that TPF results have a positive effect on profit-sharing financing. Likewise, the results of research from (Puspita, 2017), (Ryad & Yupi, 2017), (Siregar & Kalsum, 2017), (Risfiati & Utama, 2019) and (Pradita, Santos, & Kartika, 2019) found Third Party Funds influence on profit sharing financing. These results indicate that Third Party Funds function in terms of increasing profit margin financing. Based on the description above, the hypothesis is put forward as follows:

H_{1a}: Third Party Funds have a positive effect on profit margin financing

H_{1b}: Third Party Funds have a positive effect on profit sharing financing

Financing risks (Non Performing Financing) and financing schemes

Financing risk as measured by Non-Performing Financing or NPF is an indicator showing losses due to credit risk, which is reflected in the size of Non-Performing Loans or NPLs, in the terminology of Islamic Banks it is usually considered Non-Performing Financing. Non Performing financing is the ratio between problematic financing and using the total financing disbursed by Islamic banks. Based on the criteria set by Bank Indonesia, Non-Performing Financing is substandard, doubtful and loss financing.

Research conducted by (Aziza & Mulazid, 2017) found that non-performing financing had no effect on profit margin financing. Likewise with the results of research from (Agista, 2015) which explains that Non-Performing Financing has no partial effect on profit margin financing. Another study conducted by (Farianti, 2019) found that non-performing financing had a negative but not significant effect on profit margin financing at Islamic commercial banks in Indonesia. This causal relationship indicates that an increase in the level of Non-Performing Financing is not always followed by a lower amount of profit margin financing. On the other hand, the results of this study are in line with the findings of studies conducted by (Asnaini & Erawati, 2017) and (Ali & Miftahurrohman, 2016) that Non-Performing Financing has no significant effect on profit margin financing. Meanwhile, the results of research from (Prastanto, 2013) and (Asnaini & Erawati, 2017) found that non-performing financing has a negative effect on profit margin financing.

Furthermore, another study conducted by (Sucingtias & Latifah, 2013) found that non-performing financing has a negative effect on profit-sharing financing. The results of this study are in accordance with research studies conducted by (Adnan, 2005) and (Muhammad, 2005) which prove that Non-Performing Financing has a negative effect on profit-sharing financing. Research conducted by (Mubarok, 2018) found that non-performing financing has a significant negative effect on profit-sharing financing. The results of this study are in line with research (Bakti, 2017) which explains that Non-Performing Financing has a significant negative effect on financing at 11 Islamic Commercial Banks in Indonesia. Based on the description above, the hypothesis is put forward as follows:

H_{2a}: Non-Performing Financing has a negative effect on profit margin financing

H_{2b}: Non-Performing Financing has a negative effect on profit sharing financing

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Liquidity risk (Financing to Deposit Ratio) and Financing schemes

Liquidity risk as measured by the Financing to Deposit Ratio or FDR is the ratio between the amount of financing provided and received by a bank. The Financing to Deposit Ratio can also be reviewed using the ratio between the distribution of funds provided by the bank and the amount of public funds or third public funds received, including demand deposits, deposits and savings. The financing deposit ratio Financing to Deposit Ratio is a measure of the performance of a bank in terms of paying off withdrawals. Depositors rely on the funds provided as a source of liquidity, the more money they get, the more money they get by looking at the bank's performance in terms of financing, as well as the extent to which it is capable bank in returning the deposited funds. The higher the value of the Financing to Deposit Ratio, the greater the financing that has been distributed to customers. However, if the Financing to Deposit Ratio is higher, it indicates a bank's opportunity to obtain a higher return so that banks are more interested in channeling financing in the following year.

According to (Prastanto, 2013) and (Yuliani, 2019) found the Financing to Deposit Ratio has a positive effect on profit margin financing. This can be interpreted that the higher the value of the Financing to Deposit Ratio, the higher the margin of profit disbursed by a bank. Likewise (Farianti, Pramuka, & Purwati, 2019) and (Jannah, 2018) also found the Financing to Deposit Ratio had a positive and significant effect on profit margin financing. However (Ayuningtyas, 2021) and (Kusnianingrum & Riduwan, 2016) found the Financing to Deposit Ratio has no effect on profit margin financing.

Meanwhile for profit-sharing financing schemes, the results of research conducted by (Pratiwi, 2018), (Asri & Syaicu, 2016) and (Prasasti & Prasetiono, 2014) found that the Financing to Deposit Ratio has an effect on profit sharing financing. Likewise, research from (Hasrina & Dasmi, 2019) and (Gunanto, Suprihati, & Aristi, 2018) found the Financing to Deposit Ratio had a significant positive effect on profit sharing-based financing. Based on the description above, the following hypothesis is put forward:

H_{3a}: Financing to Deposit Ratio has a positive effect on Profit Margin Financing

H_{3b}: Financing to Deposit Ratio has a positive effect on Profit Sharing Financing

Capital Adequacy Ratio (Capital Adequacy Ratio) and Financing schemes

Sufficient capital is an important factor for Islamic banking to increase the level of public trust. Capital Adequacy Ratio or CAR describes capital adequacy which describes the ability of a bank to maintain its capital to suffice bank management in terms of identifying, measuring, monitoring and controlling risks that may arise and can affect the size of the bank's capital.

Research conducted by (Aziza & Mulazid, 2017), (Agista, 2015) and (Ali & Miftahurrohman, 2016) found that the Capital Adequacy Ratio has a positive effect on profit margin financing. Meanwhile (Ayuningtyas, 2021) states that the Capital Adequacy Ratio variable has no effect on profit margin financing.

In the profit-sharing financing scheme, the results of research conducted by (Mili, Sahut, Trimeche, & Teulon, 2017) found that the Capital Adequacy Ratio has an influence on profit-sharing financing. Likewise, the results of research (Stianingsih, 2019), (Bakti, 2017) and (Septiani, 2017) found that the Capital Adequacy Ratio Capital Adequacy Ratio has a significant effect on profit sharing financing. Based on the description above, the hypothesis is put forward as follows:

H_{4a}: Capital Adequacy Ratio has a negative effect on profit margin financing

H_{4b}: Capital Adequacy Ratio has a positive effect on profit sharing financing

Operational Risk and Financing Scheme

Operating risk is often measured by the ratio of operating expenses to operating income (EIR), which is the ratio between total operating expenses and total operating income. When a bank is unable to control its operating costs, it will greatly affect the measurement of efficiency levels, as a result it is necessary to compare the total operating expenses and total operating income. When the level of value owned by Operational Income Operating Costs increases, the efficiency level owned by the bank will also look low. Vice versa, when the value of Operational Income Operating Costs decreases, the bank will also have a high and good level of efficiency.

Research conducted by (Dwiawani, 2021), (Wahyudi, 2016) and (Ali & Miftahurrohman, 2016) found that EIR has a negative effect on profit margin financing. Likewise with the results of research from (Kusumaningtyas & Mukminan, 2014) and (Yuliani, 2019) which found EIR had a negative effect on profit margins. Meanwhile, research conducted by (Wahyuningrum, 2018), Maharani (2019), and (Yunita, 2017) found EIR had no significant effect on profit margin financing.

The results of research on profit-sharing financing schemes show a negative effect between EIR and profit-sharing financing (Setiawan, 2020). However (Sekarrini, 2018) found EIR had no influence on profit sharing financing.

H_{5a}: EIR has a negative effect on profit margin financing

H_{5b}: EIR has a negative effect on profit sharing financing

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III. RESEARCH METHODE

Population and Sample

According to (Sugiyono, 2017) population is a generalized area consisting of objects/subjects that have certain qualities and characteristics set by researchers to study and then draw conclusions. The population in this study were 6 companies in the banking sector listed on the Indonesia Stock Exchange (IDX) in 5 periods from 2016-2020.

According to (Sugiyono, 2017) the sample is part of the number and characteristics possessed by the population. The sample technique in this study was taken by purposive sampling. Purposive sampling is a sampling technique for data sources with certain considerations.

Variable and Measurement

The dependent variable is the variable that is affected or is the result of the independent variable (Sugiyono, 2017). The dependent variable used in this study is profit margin financing and profit sharing financing.

Table 1: Variable and Measurement

Variable	Symbol	Measurment
<i>Dependent Variables:</i>		
Profit margin financing	PMF	Ln Total murabaha financing
Profit sharing financing	psf	Ln Total mudharaba + Musharaka financing
<i>Independent Variable:</i>		
Third party fund	TPF	Ln Total Assets
Non-performing financing	NPF	Bad financing/Total Financing
Financing to Deposit Ratio	FDR	Total financing/Third party fund
Capital Adequacy Ratio	CAR	Total Equity/Risk weighted Assets
Operating Expense to Income Ratio	EIR	Operating expense/Operating income

Data analysis

To test the hypothesis of the determinants of Islamic bank financing schemes, panel data regression analysis will be used, with the regression equation as follows:

$$\text{Model 1: } PMF_{it} = a + \beta_1 TPF_{it} + \beta_2 NPF_{it} + \beta_3 FDR_{it} + \beta_4 CAR_{it} + \beta_5 EIR_{it} + \epsilon_{it}$$

$$\text{Model 2: } PSF_{it} = a + \beta_1 TPF_{it} + \beta_2 NPF_{it} + \beta_3 FDR_{it} + \beta_4 CAR_{it} + \beta_5 EIR_{it} + \epsilon_{it}$$

IV. RESULT AND DISCUSSION

Statistics Descriptive

The data that has been collected and tabulated can be described in descriptive statistics as follows:

Table 2: Statistics Descriptive

	TPF	NPF	FDR	CAR	EIR	PMF	PSF
Mean	29.53667	29.74933	28.9770	0.10200	0.61000	0.206333	0.917333
Median	29.64000	30.25000	29.4550	0.08000	0.57500	0.190000	0.920000
Maximum	30.94000	31.45000	30.9900	0.28000	0.93000	0.450000	1.000000
Minimum	27.89000	27.72000	26.6300	0.01000	0.20000	0.120000	0.810000
Std. Dev.	0.905098	1.267789	1.30501	0.06477	0.21287	0.079848	0.057532
Observation s	30	30	30	30	30	30	30

Source: Data processed

Based on the table of descriptive statistics, it is known that the number of observations in this study was 30. The highest TPF value was 30.99, the lowest value was 26.63, and the average value was 28.98 of the total number of observations. The highest Non Performing Financing score was 0.28, the lowest value was 0.01, and the average value was 0.102 from all observations. The highest Financing to Deposit Ratio value was 0.93, the lowest value was 0.20, and the average value was 0.61 from all observations. The highest Capital Adequacy Ratio value is 0.45, the lowest value is 0.12, and the average value is 0.206 from all observations. The highest EIR value is 1.00, the lowest value is 0.81, and the average value is 0.917 from all observations. The highest PMF value was 31.45, the lowest value was 26.72, and the average value was 29.74 from all observations. The highest PSF value was 30.94, the lowest value was 27.89, and the average value was 29.53 from all observations.

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Panel Data Model Selection

In multiple regression, there are three modes consisting of common effect, fixed effect, random effect models. To determine the best model, a model test can be carried out with the following results:

Table 3: Best Model Test

Type of Test	Summary			Best model
	Statistic	d.f.	Prob.	
Chow-test	33.034.295	5	0.0000	Fixed Effect
Hausman-test	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
	38.144.443	5	0.0000	Fixed Effect

Source: Data processed

Based on the table above, it can be concluded that the best model in this study is the fixed effect model.

Hypothesis Test Results

After testing the model and obtaining the best model is the fixed effect model, then what will be discussed next is the results of data processing with the fixed effect model. The results of the data processing are as follows:

Table 4: Hypotheses Result with Fixed Effect

Variable	PMF			PSF			Pro b
	Coef.	t-statistic	Prob	Coef.	t-statistic		
C	6.638.77	2.383.794	0.0254	4.706.543	1.077.695		0.2919
TPF	0.70964	9.354.293	0.0000	0.695443	5.845.851		0.0000
NPF	-0.06042	-3.544.493	0.0017	0.023526	0.880118		0.3875
FDR	-0.006432	-1.719.893	0.0983	-0.000478	-0.081505		0.9357
CAR	0.037290	3.440.087	0.0021	0.009203	0.541424		0.5932
EIR	-0.047034	-3.436.574	0.0022	-0.044396	-2.068.594		0.0495

Source: Data processed

Effect of Third Party Funds on financing schemes

Based on the results of the study, it shows that third party funds have a positive and significant effect on all financing, both profit margin financing and profit sharing financing. The results of this study are reinforced by Hidayah et al's research (2020) research on Islamic Banking in Indonesia which shows that the Third Party Funds variable has a positive effect on profit margin financing at BRI Syariah.

Funds are a major problem for banks, including Islamic banks, without sufficient funds, banks cannot carry out their activities or even not function at all. If the Third Party Funds owned by the bank increase/increase, the funds channeled for financing will also increase. Thus, TPF can be allocated by banks using the form of distribution including for financing.

This research is in line with research conducted by (Nurbaya, 2013) and (Rimadhani & O, 2011) which stated that TPF had a significant positive effect on PMF. Other research that supports it, namely (Sinaga, 2021) states that the Third Party Funds Variable has a positive and significant effect on PMF financing.

Effect of Non-Performing Financing (NPF) on financing schemes

Based on the results of hypothesis testing, it is known that Non Performing Financing has a negative and significant effect on profit margin financing, but does not affect profit sharing financing. Non-Performing Financing or NPF is an indicator showing losses due to credit risk, which is reflected in the size of Non-Performing Loans or NPLs, so that higher Non-Performing Financing will reduce financing because banks will be more careful in disbursing funds. The results of this study are reinforced by research (Nahrawi, 2017), (Husaeni, 2017) in the results of his research showing that Non-Performing Financing has a significant negative effect on profit margin financing.

Meanwhile in PSF, Non Performing Financing did not affect profit sharing financing, meaning that the level of Non Performing Financing did not affect financing risk. This result is possible because the portion of profit sharing financing is relatively small because the risk is very large. With the smaller portion of the PSF, the amount of Non-Performing Financing becomes ineffectual in influencing the PSF. The results of this study are reinforced by research (Primavera, 2017) that non-performing financing has no effect on PSF.

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Effect of Financing to Deposit Ratio (FDR) on financing schemes

The results of the study show that the Financing to Deposit Ratio has no effect on all financing schemes, both PMF and PSF. The amount of the Financing to Deposit Ratio shows that the greater the financing provided, which should be able to increase the amount of financing, but in reality it does not have a significant effect on all financing schemes. This result was made possible because the financing provided was focused on financing other than the two schemes (PMF and PSF). The results of this study were reinforced by research (Sulistya, 2017) which found the Financing to Deposit Ratio had no effect on profit margin financing (PMF). The results of other studies that support the results of research conducted by (Haqiqi, 2016) and (Nurbaya, 2013) state that the ratio of Financing to Deposit Ratio has no effect on PMF.

Effect of Capital Adequacy Ratio (CAR) on financing schemes

The results showed that the Capital Adequacy Ratio had a positive and significant effect on profit margin financing but had no effect on profit sharing financing. Sufficient capital is an important factor for Islamic banking to increase the level of public trust. Capital Adequacy Ratio or CAR describes capital adequacy which describes the ability of a bank to maintain its capital to suffice bank management in terms of identifying, measuring, monitoring and controlling risks that may arise and can affect the size of the bank's capital. These results also show that the Capital Adequacy Ratio is used to increase PMF, but it is not intended for profit-sharing financing with a higher risk, so that the Capital Adequacy Ratio has a positive effect on PMF but has no effect. The results of the research are reinforced by research (Nahrawi, 2017) and (Husaeni, 2016) which show that the Capital Adequacy Ratio has a positive effect on Profit Margin Financing. It can be concluded that the higher the value of the Capital Adequacy Ratio, the better the bank's ability to bear the risk of any credit or risky productive assets. Subsequent research that is not in line with previous research conducted by and (Asri & Syaicu, 2016) obtained results that were in line, where the Capital Adequacy Ratio had no effect on profit-sharing-based financing.

The Effect of Operational Income Operating Costs on Profit Margin Financing

The results of the study show that Operational Income Operating Costs have a negative and significant effect on profit margin financing, meaning that the higher the level of Operating Income Operating Costs, the lower the profit margin financing carried out by Islamic Commercial Banks. The results of this research are reinforced by research (Yuliani, 2019) which states that Operational Income Operating Costs have a negative and significant effect on profit margins. In this case it is usually caused by the level of efficiency of a bank in carrying out its operations which affects the income generated by Islamic Commercial Banks. If operational activities are carried out efficiently, the income generated by the bank will increase. In addition, the large amount of Operational Income Operating Costs is caused by the high cost of funds raised and the low interest income from investing funds, so that the higher the Operating Costs Operating Income, the lower the Profit Margin disbursed financing. While research conducted by (Pramilu 2012) showed the results that Operational Income Operating Costs have a negative effect on the level of profit sharing at Islamic Commercial Banks.

V. CONCLUSIONS

Based on the results of tests and analyzes that have been carried out by researchers, it can be concluded that TPF has a positive and significant effect on all financing schemes, while the risk of non-performing financing only has a negative effect on profit margin financing but does not affect profit sharing financing. Financing to Deposit liquidity risk does not affect all financing schemes, while Capital Adequacy Ratio capital has a positive effect on profit margin financing but does not affect profit sharing financing. Meanwhile, operational risk has a negative and significant effect on all financing schemes.

This study certainly has weaknesses, such as the sample is only 50% of the total population, so future researchers can conduct research by increasing the number of samples and adding variables that have not been studied in this study.

REFERENCES

- 1) Adnan, A. (2005). Analisis Hubungan Dana Pihak Ketiga, Modal Sendiri, NPL Prosentase Bagi Hasil dan Markup Keuntungan terhadap Pembiayaan pada Perbankan Syariah Studi Kasus pada Bank Muamalat Indonesia (BMI). *Jurnal Sinergi*, -.
- 2) Aiman, B. S. (2020). Pengaruh Non-Performing Financing Pembiayaan Murabahah, Mudharabah, dan Musyarakan terhadap Profitabilitas Bank Umum Syariah di Indonesia . *Review Akuntansi dan Bisnis Indonesia*, Vol. 4; No. 1; Halaman 79-92.
- 3) Ali, H., & Miftahurrohman. (2016). Determinan yang mempengaruhi Pembiayaan Murabahah pada Perbankan Syariah di Indonesia. *Jurnal Bisnis dan Manajemen*, Vol. 6; No. 1.

Determining Factors of Financing Scheme Cases on Islamic Banking in Indonesia

- 4) Ali, H., & Miftahurrohman. (2016). Determinan yang mempengaruhi Pembiayaan Murabahah pada Perbankan Syariah di Indonesia. *Jurnal Bisnis dan Manajemen*, Vol. 6; No. 1.
- 5) Amirah, A. N. (2017). Pengaruh Capital Adequacy Ratio (CAR), Return on Assets (ROA) dan Non Performing Financing (NPF) terhadap Pembiayaan Murabahah BNI Syariah. *Perisai*, Vol. 1; No. 2.
- 6) Aprilianto, F. (2020). An Analysis of Financing Scheme Effect on Non-Performing Financing Asset at Islamic Banks In Indonesia. *Falah: Jurnal Ekonomi Syariah*, 5(1), 25–32. <https://doi.org/10.22219/jes.v5i1.11400>
- 7) Annisa, S., & Fernanda, D. (2017). Pengaruh Dana Pihak Ketiga, Tingkat Bagi Hasil dan Non Performing Financing terhadap Volume dan Porsi Pembiayaan Berbasis Bagi Hasil pada Perbankan Syariah di Indonesia. *Share: Jurnal Ekonomi dan Keuangan Islam*, Vol.19; No.2; 300-305.
- 8) Asnaini, S. W., & Erawati, D. (2017). Faktor-faktor yang mempengaruhi Pembiayaan Murabahah pada bank Umum Syariah di Indonesia. *JOCE IP*, Vol. 11; No. 1.
- 9) Asri, A. S., & Syaicu. (2016). Analisis Faktor yang Mempengaruhi Pembiayaan Berbasis Bagi hasil pada Perbankan di Indonesia Periode 2010-2014. *Diponegoro Journal of Management*, Vol.5; No.3.
- 10) Ayuningtyas, H. (2021). Pengaruh Capital Adequacy Ratio (CAR), Third Party Funds (TPF) dan Financing to Deposit Ratio (FDR) terhadap Pembiayaan Murabahah dengan Non Performing Financing (NPF) sebagai Variabel Moderating pada Bank Umum Syariah Periode 2015-2020. *Skripsi*, 1-113.
- 11) Aziza, S. V., & Mulazid, S. A. (2017). Analisis Pengaruh Dana Pihak Ketiga, Non Performing Financing, Capital Adequacy Ratio, Modal Sendiri dan Marjin Keuntungan terhadap Pembiayaan Murabahah. *JEBI (Jurnal Ekonomi dan Bisnis Islam)*, Vol. 2; No. 1; 1-15.
- 12) Bakti, N. S. (2017). Analisis DPK, CAR, ROA, dan NPF terhadap Pembiayaan pada Perbankan Syariah. *Jurnal Bisnis dan Manajemen*, vol.17; No.2; 15-28.
- 13) Dwiawani, P. (2021). Analisis Determinan yang mempengaruhi Pembiayaan Murabahah pada Bank Umum Syariah di Indonesia. *Skripsi*, 1-133.
- 14) Faisal, F. (2021). Pengaruh Capital Adequacy Ratio (CAR) dan Biaya Operasional per Pendapatan Operasional (BOPO) terhadap Non Performing Financing (NPF) di BPRS Indonesia Periode 2014-2018. *Jurnal Keuangan dan Perbankan Syariah*, 55-68; Vol.01; No.01.
- 15) Farianti, R. (2019). Pengaruh NPF, NOM dan FDR terhadap Pembiayaan Murabahah dengan DPK sebagai Variabel Moderating. *Journal of Islamic Banking and Finance*.
- 16) Farianti, R., Pramuka, A. B., & Purwati, S. A. (2019). Pengaruh NPF, NOM dan FDR terhadap Pembiayaan Murabahah dengan DPK sebagai Variabel Moderating. *MALIA: Journal of Islamic Banking Finance*, Vol. 3; No. 1; 17-32.
- 17) Fatmawati, I. (2016). Pengaruh Pembiayaan Murabahah, Mudharabah, Musyarakah dan Ijarah terhadap Laba Bersih Bank Umum Syariah di Indonesia. *Skripsi*.
- 18) Firdaus, N. N., Iswati, S., & Rizki, A. (2019). Analysis the Effect of Third Party Funds, Non Performing Financing, Capital Adequacy Ratio, and Bank Indonesia Sharia Certificates toward Financing - Case Studies of Indonesia Islamic Banking Period 2010-2015. *International Postgraduate School Collected*, 201-209.
- 19) Ghozali, I. (2013). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 21*. Semarang: Badan Penerbit Universitas Diponegoro.
- 20) Gunanto, S. D., Suprihati, & Aristi, W. F. (2018). Pengaruh Financing to Deposit Ratio, Dana Pihak Ketiga dan Return on Asset terhadap Pembiayaan Musyarakah. *Edunomika*, Vol. 02; No. 02; 1-12.
- 21) Haqiqi, H. (2016). Analisis Pengaruh Non Performing Financing (NPF), Financing to Deposit Ratio (FDR), Inflasi dan Capital Ratio (CAR) terhadap Proporsi Pembiayaan Murabahah pada Bank Umum Syariah di Indonesia. *Skripsi*.
- 22) Hasibuan, M. I. (2019). Pengaruh Pembiayaan Murabahah, Mudharabah, Musyarakah dan Ijarah terhadap Laba Bersih pada Bank Umum Syariah di Indonesia. *SKripsi*, 1-125.
- 23) Hasrina, D. C., & Dismi, K. (2019). Pengaruh Financing to Asset Ratio, Financing to Deposit Ratio, dan Dana Pihak Ketiga terhadap Pembiayaan Musyarakah pada Bank Umum Syariah yang terdaftar di Bursa Efek Indonesia. *Serambi Akademika Jurnal Pendidikan, Sains, dan Humaniora*, Vol.7; No.2; 165-170.
- 24) Husaeni, U. A. (2016). The Variables Effects of Murabahah in Islamic Commercial Banks. *International Journal of Nusantara Islam*, 04(02), 1–16. Retrieved from <https://journal.uinsgd.ac.id/index.php/ijni/article/view/1446>
- 25) Irmawati, D. E. (2014). Pengaruh FDR, Pembiayaan Jual Beli, Pembiayaan Bagi Hasil, Pembiayaan Sewa Menyewa dan NPF terhadap Profitabilitas. *Skripsi*, 25.
- 26) Ismail, J., & Kadir, R. (2020). Determinan Pembiayaan Murabahah pada Bank Pembiayaan Rakyat Syariah (BPRS) di Indonesia. *Jurnal Ekonomi, Keuangan dan Bisnis*, Vol.5; No.01; 1-10.

Determining Factors of Financing Scheme Cases on Islamic Banking in Indonesia

- 27) Jannah, M. (2018). Analisis Pengaruh NPF, FDR, BOPO, CAR dan NIM sebagai Variabel Intervening Bank Umum Syariah periode 2013-2017. *Skripsi*.
- 28) Jihan, I. M. & S. (2019). The Effect Of Murabahah, Musyarakah and Capital Adequacy Ratio Financing on Profitability of Sharia Commercial Banks in Indonesia With Non Performing Financing Ratio as Moderating Variables. *Thesis*, 1–14.
- 29) Kurniawati, F. (2018). Analisis Faktor-faktor yang Mempengaruhi Pembiayaan Murabahah pada Perbankan Syariah di Indonesia tahun 2012-2017. *Politeknik Negeri Samarinda*.
- 30) Kusniningrum, D., & Riduwan, A. (2016). Determinan Pembiayaan Murabahah (Studi pada Bank Syariah Mandiri). *Jurnal Ilmu dan Riset Akuntansi*, Vol.1; No.1; 1-19.
- 31) Kusumastuti, W. I., & Alam, A. (2019). Analysis of Impact of CAR, BOPO, NPF on Profitability of Islamic Banks. *Journal of Islamic Laws*, 30-59; Vol. 2; No. 1.
- 32) Maharani, B. (2019). Analisis Pengaruh Return on Asset (ROA), Non Performing Financing (NPF), Biaya Operasional terhadap Pendapatan Operasional (BOPO), Financing to Deposit Ratio (FDR) dan Inflasi terhadap Pembiayaan Murabahah pada Bank Umum Syariah. *Naskah Publikasi*, 1-15.
- 33) Mili, M., Sahut, J. M., Trimeche, H., & Teulon, F. (2017). Determinants of the Capital Adequacy Ratio of Foreign banks' Subsidiaries: The Role of Interbank Market and Regulation. *Journal Research in International Business and Finance*, 442-453.
- 34) Mubarak, F. (2018). Dinamika Makro-Mikro pada Pembiayaan Musyarakah. *ISLAMADINA (Jurnal Pemikiran Islam)*, Vol.19; No.2; 59-74.
- 35) Nahrawi, A. A. (2017). Pengaruh Capital Adequacy Ratio, Return on Assets dan Non Performing Financing terhadap Pembiayaan Murabahah BNI Syariah. *Jurnal Perisai*, Vol. 1; Nol. 2.
- 36) Nasiroh, E. (2017). Pengaruh Penggunaan Internet Banking dan Dana Pihak Ketiga terhadap Pendapatan Laba Bank Umum Syariah. *Skripsi*.
- 37) Nurbaya, F. (2013). Analisis Pengaruh CAR, ROA, FDR, dan Dana Pihak Ketiga (DPK) terhadap Pembiayaan Murabahah Periode Maret 2001- Desember 2009 (STudi Kasus pada PT. Bank Muamalat Indonesia, Tbk). *Skripsi*, -.
- 38) Nurjaya, E. (2011). Analisis Pengaruh Inflasi, SWBI, NPF, dan DPK terhadap Pembiayaan Murabahah pada Bank Syariah di Indonesia. *Skripsi*, -.
- 39) Oktriani, Y. (2008). Pengaruh Bagi Hasil, Jual Beli, dan Sewa terhadap Laba Bank Mandiri Syariah tahun 2005-2007. *Skripsi*.
- 40) Ovami, C. D., & Thohari, A. A. (2018). Pengaruh Dana Pihak Ketiga dan Non Performing Financing terhadap Pembiayaan Musyarakah. *Jurnal Penelitian Pendidikan Sosial Humaniora*, Vol.3; No.1; 1-7.
- 41) Pradita, N., Santos, I. H., & Kartika, A. (2019). Determinan Pembiayaan Murabahah pada Bank Umum Syariah di Indonesia. . *Procceding Management Dynamic Conference 5th*, -.
- 42) Prasasti, D., & Prasetiono. (2014). Analisis Pengaruh Financing to Deposit Ratio, Non Performing Financing, Spread Bagi Hasil dan Tingkat Bagi hasil terhadap Pembiayaan Bagi Hasil (Studi pada Bank Umum Syariah di Indonesia Periode Tahun 2008-2013). *Diponegoro Journal of Management*, Vol.4; No.4.
- 43) Prastanto. (2013). Faktor yang Mempengaruhi Pembiayaan Murabahah pada Bank Umum Syariah di Indonesia. *Accounting Analysis Journal*, Vol.2; No.1.
- 44) Pratiwi, N. F. (2018). Pengaruh FDR, DPK, ROA terhadap Pembiayaan di Bank Syariah (Studi Kasus pada Bank Syariah Mandiri). *Jurnal Education and Economics*, Vol.01; No.03; 37-48.
- 45) Primavera, C. D. (2017). Analisis Pengaruh Non Performing Financing (NPF) dan Financing to Deposit Ratio (FDR) terhadap Presentase Bagi Hasil Deposito Mudharabah Mutlaqah pada Bank Umum Syariah di Indonesia periode 2010-2015. *Bachelor's thesis*.
- 46) Puspita, J. (2017). Pengaruh Dana Pihak Ketiga, Non Performing Financing dan Penempatan Dana Sertifikat Bank Indonesia Syariah terhadap Volume Pembiayaan Musyarakah pada PT. Bank Syariah Mandiri. *Skripsi*, 1-99.
- 47) Puspitasari, D. (2009). Analisis Pengaruh CAR, NPL, PDN, NIM, BOPO, LDR dan Suku Bunga SBI terhadap ROA (Studi pada Bank Devisa di Indonesia Periode 2003-2007). *Tesis*, 1-131.
- 48) Rachmawaty, J. R., & Idayati, F. (2017). Analisis Faktor-faktor yang Mempengaruhi Pembiayaan Jual-Beli Murabahah pada Perbankan Syariah di Indonesia. *Jurnal Ilmu dan Riset Akuntansi (JIRA)*, Vol.6; No.9.
- 49) Rahmadian, T. R. (2018). Pengaruh Dana Pihak Ketiga terhadap Pembiayaan Murabahah di Bank Umum Syariah periode 2010-2016. *Skripsi*.
- 50) Rimadhani, M., & O, E. (2011). Analisis Variabel Variabel yang mempengaruhi Pembiayaan Murabahah pada BSM: Periode 2008-2011i. *Jurnal Media Ekonomi*, Vol.19; No.1; 27-40.

Determining Factors of Financing Scheme Cases on Islamic Banking in Indonesia

- 51) Risfiati, L., & Utama, H. B. (2019). Influence of hird Party Fund, Capital AdequacyRatio, Non Performing Financing and Return on Asset to the Distribution of Financing At Sharia Commercial Bank in Indonesia Period 2015-2017. *Jurnal Aktual*, Vol.4; No.1; 83-92.
- 52) Rivai, V., Sudarto, B. S., & Veitzal, A. P. (2013). *Commercial Bank Management*. Jakarta: Grafindo Perkasa.
- 53) Ryad, A. M., & Yupi, Y. (2017). Pengaruh Dana Pihak Ketiga (DPK), Capital Adequacy Ratio (CAR), Non Performing Financing (NPF) terhadap Pembiayaan. *Jurnal Riset Akuntansi dan Keuangan*, Vol.5; No.3; 1535-1540.
- 54) Sari, M. K. (2016). Determinants of Islamic commercial banks financing risk in Indonesia. *Journal of Islamic Economics Lariba*, 2(2), 25–32.
- 55) Schoon, N. (2016). *Modern Islamic Banking: Products and Processes in Practice*. John Wiley & Sons Ltd.
- 56) Sekarrini, A. N. (2018). Pengaruh DPK, CAR, FDR, BOPO, NPF terhadap Pembiayaan Musyarakah pada Bank Umum Syariah Periode 2010-2016. *Skripsi*, 1-100.
- 57) Septiani, A. (2017). Pengaruh Dana Pihak Ketiga (DPK), Capital Adequacy Ratio (CAR) dan Return on Asset (ROA) terhadap Pembiayaan Musyarakah pada Bank Umum Syariah (Studi Kasus padda Bank Umum Syariah di Indonesia periode 2011-2015). *Skripsi*, -.
- 58) Setiawan, I. (2020). Pengaruh DPK (Dana Pihak Ketiga), NPF (Non Performing Financing), FDR (Financing to Deposit Ratio), BOPO (Biaya Operasional terhadap Pendapatan Operasional), ROA (Return on Assets) terhadap Pembiayaan Musyarakah Studi Empiris PT BPRS Hasanah 2011-2018. *Skripsi*, 1-94.
- 59) Sinaga, V. E. (2021). Analisa Pengaruh Dana Pihak Ketiga (DPK), Non Performing Financing (NPF) Murabahah, dan Capital Adequacy Ratio (CAR) terhadap pembiayaan Murabahah pada Bank Umum Syariah di Indonesia Periode 2015-2018. *Jurnal Ekonomi dan Bisnis*, 158-169; Vol. 8; No. 1.
- 60) Siregar, S. A., & Kalsum, U. (2017). Pengaruh Dana Pihak Ketiga, Modal Sendiri, Non Performing Financing dan Tingkat Bagi Hasil terhadap Jumlah Pembiayaan Bagi Hasil. *Jurnal Finansial Bisnis*, Vol.1; No.1; 31-40.
- 61) Sofyan, M. (2019). Faktor-faktor yang Mempengaruhi Kinerja Keuangan BPR Syariah. *Jurnal Sains Manajemen*, 183-195; Vol. 5; No. 2.
- 62) Stianingsih, I. (2019). Analisis Faktor-faktor yang Mempengaruhi Pembiayaan Musyarakah (Studi pada Bank Umum Syaria;ah di Indonesia periode tahun 2016-2018). *Skripsi*, -.
- 63) Sucingtias, A. S., & Latifah, D. (2013). Analisis Pembiayaan Musyarakah pada Bank Umum Syariah di Indonesia. *EKOBIS (Jurnal Ekonomi dan Bisnis)*, Vol.15; No.2; 1-26.
- 64) Sulistya, A. D. (2017). Pengaruh Dana Pihak Ketiga (DPK), Non Performing Financing (NPF), dan Financing to Deposit Ratio (FDR) terhadap Pembiayaan Murabahah pada Perbankan Syariah di Indonesia. *Skripsi Fakultas Ekonomi Universitas Negeri Yogyakarta*.
- 65) Sumadi, & Romdhoni, H. A. (2020). Pengaruh Financing to Deposit Ratio (FDR), Dana Pihak Ketiga (DPK) dan Return on Asset (ROA) terhadap Pembiayaan Musyarakah (studi kasus Bank Syariah Mandiri periode 2010-2018). *Jurnal Ilmiah Ekonomi Islam*, Vol.6; No.03; 599-608.
- 66) Suryani. (2011). Analisis Pengaruh Financing to Deposit Ratio (FDR) terhadap Profitabilitas Perbankan Syariah di Indonesia. *Jurnal Penelitian Sosial Keagamaan*, 59.
- 67) Sutrisno., R. A. (2014). Pengaruh Kebijakan Manajemen Dan Pembiayaan Terhadap Kinerja Bank Syariah. *Jurnal Ekonomi dan Bisnis Islam*, 170-185.
- 68) Syu'la, L. E., Sulistyo, & Irianto, F. M. (2021). Faktor Determinan Pembiayaan Musyarakah dengan NPF sebagai Variabel Moderasi. *MBR (Management and Business Review)*, Vol.5; No.1; 93-104.
- 69) Vanni, & Rockhman. (2013). Analisis Faktor-faktor yang Mempengaruhi Non-Performing Financing pada Perbankan Syariah di Indonesia. *Equilibrium: Jurnal Ekonomi Syariah*, 311.
- 70) Wahyudi, A. (2016). Determinan Pembiayaan Murabahah pada Unit Usaha Syariah: Model Regresi Panel. *Esensi: Jurnal Bisnis dan Manajemen*, 227-236.
- 71) Wahyuningrum, A. (2018). Pengaruh Dana Pihak Ketiga, Non Performing Financial, Biaya Operasional Pendapatan Operasional, Margin Murabahah terhadap Pembiayaan Murabhaah pada Bank Umum Syariah di Indonesia. *Naskah Publikasi*, 1-15.
- 72) Wardiantika, L. (2014). Pengaruh DPK, Pembiayaan dan Inflasi terhadap Pembiayaan Murabahah pada Bank Umum Syariah. *Jurnal Ibnu Manajemen*, Vol.2; No.4; 1550-1561.
- 73) Wardiantika, L., & Kusumaningtias, R. (2014). Pengaruh DPK, CAR, NPF, dan SWBI terhadap Pembiayaan Murabahah pada Bank Umum Syariah 2008-2012. *Jurnal Ilmu Manajemen*, Vol.2; No.4.

Determining Factors of Financing Scheme Cases on Islamic Banking in Indonesia

- 74) Wibowo, E. S., & Syaichu, M. (2013). Analisis Pengaruh Suku Bunga, Inflasi, CAR, BOPO, NPF terhadap Profitabilitas Bank Syariah. *Diponegoro Journal of Management*, 1-10; Vol. 2; No. 2.
- 75) Widarjono, A., Anto, M. B. H., & Fakhrunnas, F. (2020). Financing Risk in Indonesian Islamic Rural Banks : Do Financing Products Matter? *The Journal of Asian Finance, Economics and Business*, 7(9), 305–314. <https://doi.org/10.13106/jafeb.2020.vol7.no9.305>
- 76) Wirman. (2017). Faktor-faktor yang mempengaruhi Volume Pembiayaan Berbasis Bagi Hasil dan Rasio BOPO pada Perbankan Syariah Periode 2010-2014. *Jurnal Bisnis dan Akuntansi*, Vol.19; No.1.
- 77) Yuliani, W. (2019). Pengaruh DPK, NPF, CAR, ROA, BOPO dan FDR terhadap Pembiayaan Murabahah (Studi pada Bank Umum Syariah di Indonesia tahun 2011-2016). *Skripsi*.
- 78) Yunita, F. (2017). Pengaruh Dana Pihak Ketiga (DPK), Non Performing Financing (NPF), Financing to Deposit Ratio (FDR) dan BOPO terhadap Pembiayaan Murabahah pada Perbankan Syariah di Indonesia (Perode 2011-2016). *Skripsi*, 1-121.



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Revolutionizing Fistula Treatment: A Case Series on the Application of Kshara Sutra Therapy



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ABSTRACT: A chronic, abnormal contact between the epithelialized anal canal surface and the perianal skin is known as an anal fistula (fistula-in-ano), which can cause serious morbidity and lower quality of life. Traditional surgical procedures as well as more contemporary ones, like the application of fibrin glue, a plug, or closure of the intersphincteric fistula tract, are available as treatment options (LIFT). These conventional techniques, however, may have varying degrees of efficacy, and some may be connected to the risk of incontinence. The Kshara Sutra, an antiquated Ayurvedic parasurgical procedure, was used to treat a case series of 10 patients with a range of anal fistulas, ranging in complexity from simple to complex presentations. Patients in the cases range in age from 22 to 55, both male and female. Despite variations in their particular circumstances, all patients had completely healed fistulas following Kshara Sutra treatment. Additionally, this treatment showed promise in simplifying complicated fistulas. These results add to the expanding body of research that supports the use of Kshara Sutra therapy for the repair of anal fistulas, offering a promising, secure, and maybe more effective option than traditional surgical procedures.

KEYWORDS: Anal Fistula; Kshara Sutra Therapy; Ayurvedic Medicine; Parasurgical Technique; Fistula Healing; Case Series.

INTRODUCTION

Fistula-in-ano, or anal fistula, is a painful and persistent ailment that frequently presents medical experts with difficulties due to its recurrence and post-operative problems[1]. Traditional treatments include fistulotomy or seton procedures, but these cases show how the Kshara Sutra can be applied and surgical strategies can be effective in managing the condition[2]. Anal fistulas are a chronic, difficult-to-treat condition that frequently leaves patients in great agony and presents a huge challenge to medical experts[3]. They often involve a tract that connects the anorectal space to the perianal skin and are brought on by an anorectal abscess[4]. The delicate balancing act between establishing fistula closure and maintaining sphincter function to prevent faecal incontinence makes managing complex anal fistulas challenging even in the age of modern medicine[5]. Fistulotomy, a common surgical procedure, is helpful for minor fistulas but may not be the best option for complex ones due to the significant risk of harming the anal sphincter muscles[6]. Alternative treatments include seton methods, fibrin glue, endorectal advancement flaps, ligation of the intersphincteric fistula tract (LIFT), video-assisted anal fistula treatment (VAAFT), and stem cell therapy have been investigated as a result[7]. Kshara Sutra, an Ayurvedic practise, has become popular among them[8]. The use of a medicated thread in this minimally invasive, cost-effective procedure has produced encouraging results in the repair of fistulas while maintaining sphincter function. Through the administration of thread through the fistulous tract, the procedure gradually cuts, curettages, and heals the tract[9]–[12]. This paper shows the potential of this management strategy for anal transphincteric fistulas by presenting a number of difficult anal fistula cases successfully managed using a mix of surgical techniques and Kshara Sutra application.

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MATERIALS AND METHODS

This section highlights the tools, processes, and approaches utilised in the systematic approach to treating the complex anal fistulas.

Patient Population

Patients with complex transphincteric anal fistulas who had repeatedly reported pain and discharge in the perianal region over a period of several years were included in the study. Patients of both sexes, with a range of ages and medical histories, were included. While some patients had previously had incision and drainage or other surgical procedures for the management of fistulas, others had co-morbid diseases such as diabetes and hypertension.

Diagnostic Procedures

To determine the kind and intricacy of the fistula, each patient underwent an initial examination as well as an MRI fistulography. The internal and external fistula openings, the orientation of the tracks, and any potential abscesses or further tracks were all determined by this imaging. The objective was to fully comprehend the fistula's anatomy, which is essential for organising the intervention[13], [14].

Treatment Approach

The application of Kshara Sutra, a medicinal thread utilised in Ayurvedic medicine, was the cornerstone of the therapeutic strategy. Methylene blue infiltration or regular saline injection from the external orifice was the first step in the application procedure to identify the internal opening's location. Retrograde or metal probing was used in some instances. The raw proximal track was used to apply Kshara Sutra after intercepting the fistulous tract[15], [16].

Thorough curettage was performed when the fistula was intricate and had distal pathways. For improved access to the fistula tract in certain cases, windows had to be made. Regular packing with gauze material saturated in normal saline was also necessary.

Post-treatment Follow-up

Weekly Kshara Sutra changes were made, and regular checks were made on the patients' development. Reduction of symptoms, collapse of the fistula track, and total closure of the fistula were used to measure healing. Depending on the complexity of the fistula and the patient's development during the healing process, the overall treatment time varied from case to case.

For patients with difficult transphincteric fistulas, this methodical, customised approach that merged cutting-edge diagnostic equipment with the age-old Kshara Sutra technique gave a promising cure.

Case Presentations

Case 1

An anterior high anal transphincteric fistula on the right side was seen in a 29-year-old female patient. She had previously undergone incision and drainage of an abscess, which had healed in three months despite her history of constipation. But the patient developed recurrent abscesses and had a fistulotomy, which resulted in ongoing, foul-smelling drainage. When three months of uninterrupted healing, the fistula was totally healed after the Kshara Sutra was applied to the tract

Figure 1.



Figure 1: A 29-year-old female presented with a recurrent right anterior high anal transphincteric fistula Case 2

A posterior transphincteric horseshoe fistula was discovered in a 22-year-old female patient. Her signs and symptoms were painful defecation and perianal pus discharge. Kshara Sutra was used, which led to a fully healed fistula, after the fistula was probed and the fistula tract's patency was verified with betadine and hydrogen peroxide injection **Figure 2.**

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Figure 2: A 22-year-old female presented with a posterior transphincteric horseshoe fistula

Case 3

A 24-year-old male student with no history of tuberculosis or inflammatory bowel disease (IBD) appeared with pain and recurrent discharge from the perianal region for two years. He was also non-diabetic and had normal blood pressure. An MRI fistulogram showed a transphincteric fistula with an exterior opening at the lateral part of the thigh and an interior opening at 6 o'clock. Over the course of four months, the patient received treatment with the Kshara Sutra, and the fistula was totally healed **Figure 3**.



Figure 3: case 3:- transphincteric fistula with an internal opening at 6 o'clock and an external opening at the thigh's lateral aspect.

Case 4

A 27-year-old man who had two prior operations for a fistula but had no other co-morbid diseases appeared with pain and recurrent discharge from the perianal region for two years. A complicated transphincteric horseshoe fistula with internal and external openings at the six, three, and nine o'clock positions was identified by the MRI fistulogram. The patient had Kshara Sutra treatment, and after five months, the fistula was totally healed **Figure 4**.



Figure 4: case 4:- complex transphincteric horseshoe fistula with internal and external openings at 6 o'clock, 3 o'clock, and 9 o'clock

Case 5

Diabetes-related discomfort and recurring discharge from the perianal area had been present in a 54-year-old male patient for two years. His previous three fistula operations were unsuccessful. A complex transphincteric fistula with an exterior entrance at the base of the scrotum and an interior opening at 12 o'clock was identified by the MRI fistulogram, and the track leading to the urethra was also visible. In three months following Kshara Sutra therapy, the fistula was fully recovered **Figure 5**.

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Figure 5: case 5:- complex transphincteric fistula with an internal opening at 12 o'clock and an external opening at the base of the scrotum, with the track extending to the urethra

Case 6

An unco-morbid 50-year-old male patient was seen with pain and recurrent discharge from the perianal area for three years. He has undergone three fistula procedures in the past. A complicated transphincteric fistula with an exterior opening at 1 o'clock and an internal opening at 12 o'clock was identified by the MRI fistulogram. The fistula was entirely cured after receiving treatment with the Kshara Sutra in a matter of three months.

Case 7

A 47-year-old man without diabetes or hypertension arrived with two years of recurrent pain and discharge from the perianal area. The MRI fistulogram showed a transphincteric fistula with external openings at the base of the scrotum (12 o'clock) and 5 o'clock and an interior entrance at 12 o'clock. After receiving therapy with the Kshara Sutra, the fistula was entirely healed without leaving a noticeable scar in just two months **Figure 6**.



Figure 6: transphincteric fistula with internal opening at 12 o'clock and external openings at the base of the scrotum (12 o'clock) and 5 o'clock

Case 8

A 32-year-old man without diabetes or hypertension reported with two years of recurrent pain and discharge from the perianal area. A transphincteric fistula with an internal opening at 12 o'clock and an exterior opening at 9 o'clock was identified by the MRI fistulogram. Within three months of receiving treatment with the Kshara Sutra, the fistula was totally cured with minimal scarring.

Case 9

A 52-year-old male patient reported with pain and persistent discharge from the perianal region for a year. He was neither diabetic nor hypertensive. A transphincteric fistula with an internal opening at 6 o'clock and an exterior opening at 10 o'clock was identified by the MRI fistulogram. After using Kshara Sutra, the fistula was transformed into a straightforward intersphincteric fistula that could be laid open without any anxiety **Figure 7**.



Figure 6: case 9:- transphincteric fistula with an internal opening at 6 o'clock and an external opening at 10 o'clock

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Case 10

For two years, a 55-year-old man had pus coming from several external openings in the perianal area. The MRI fistulogram revealed a complicated transphincteric fistula with internal openings at 6 o'clock and exterior openings at 3 o'clock, 9 o'clock, and another deep at 7 o'clock. In three months following Kshara Sutra therapy, the fistula was fully recovered **Figure 7**.



Figure 7: case 10:- complex transphincteric fistula with multiple external openings at 9 o'clock, 3 o'clock, 7 o'clock and another deep at 7 o'clock, with an internal opening at 6 o'clock

RESULTS

Case 1

The high anal transphincteric fistula in the 29-year-old patient was fully healed after three months of Kshara Sutra therapy **Figure 8**.



Figure 8: Case 1: (a) wide opening of cavity. (b,c) Kshara Sutra was done. (d) Observe healing of wound. (e) after 3 months of treatment. (f) Complete healing.

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Case 2 Following Kshara Sutra therapy, the 22-year-old patient's posterior transphincteric horseshoe fistula was fully cured Figure 9 .

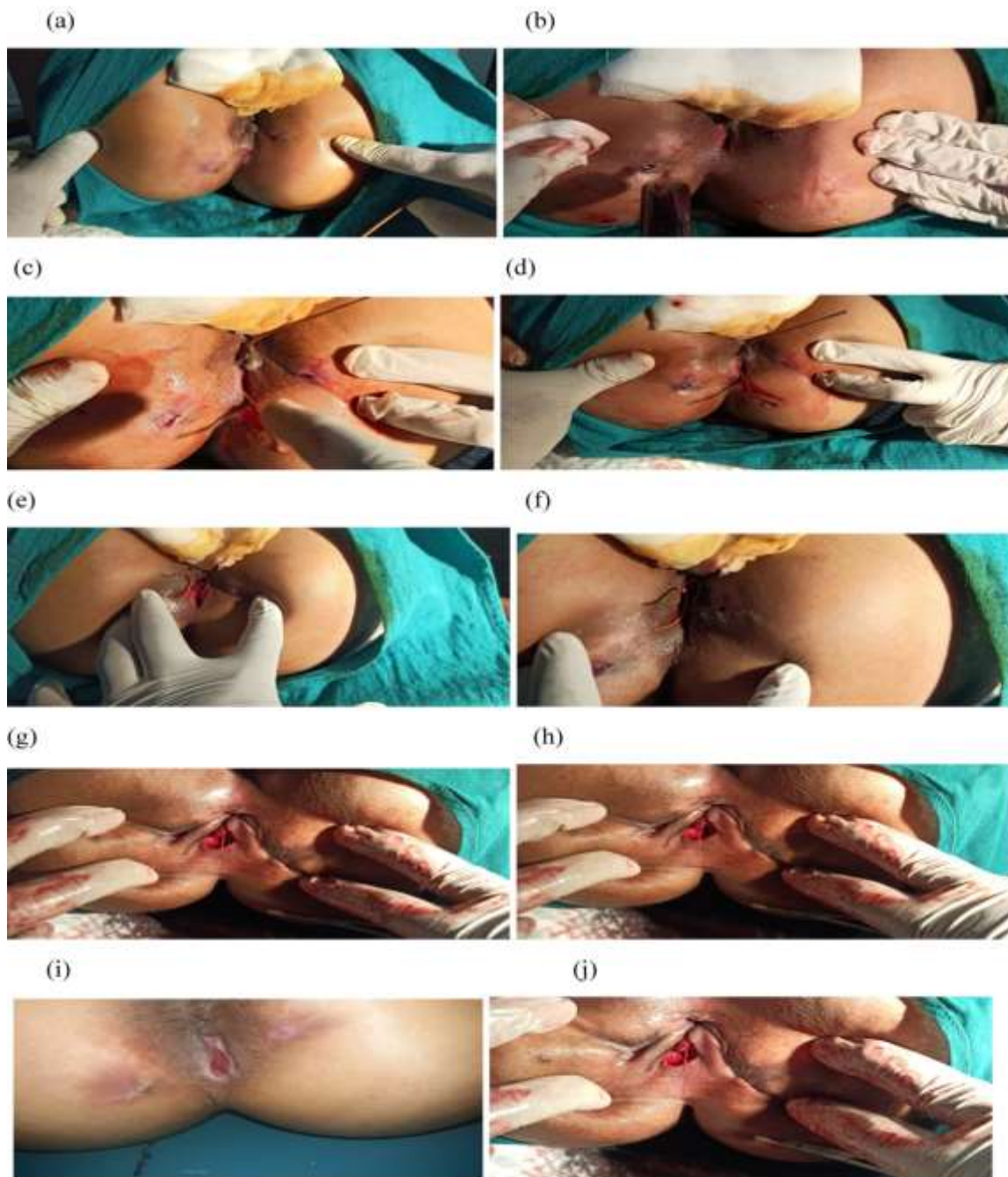


Figure 9: Case 2: (a) before doing probing. (b) Injection of betadine and H2O2 to check the patency of fistula tract. (c and d) probing fistula tract. (e, f, g, h and i) Kshara Sutra applications. (j) complete healing.

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Case 3

The transphincteric fistula in the 24-year-old male student was entirely cured after four months of Kshara Sutra therapy **Figure 10**.



Figure 10: Case 3:- (a) probing. (b) opening canal. (c) treatment with Kshara Sutra. (d) after 4 months complete healing.

Case 4

The male 27-year-old patients in each of these three cases had a complicated transphincteric horseshoe fistula. Each fistula was entirely cured after Kshara Sutra treatment in a matter of five months **Figure 11**.

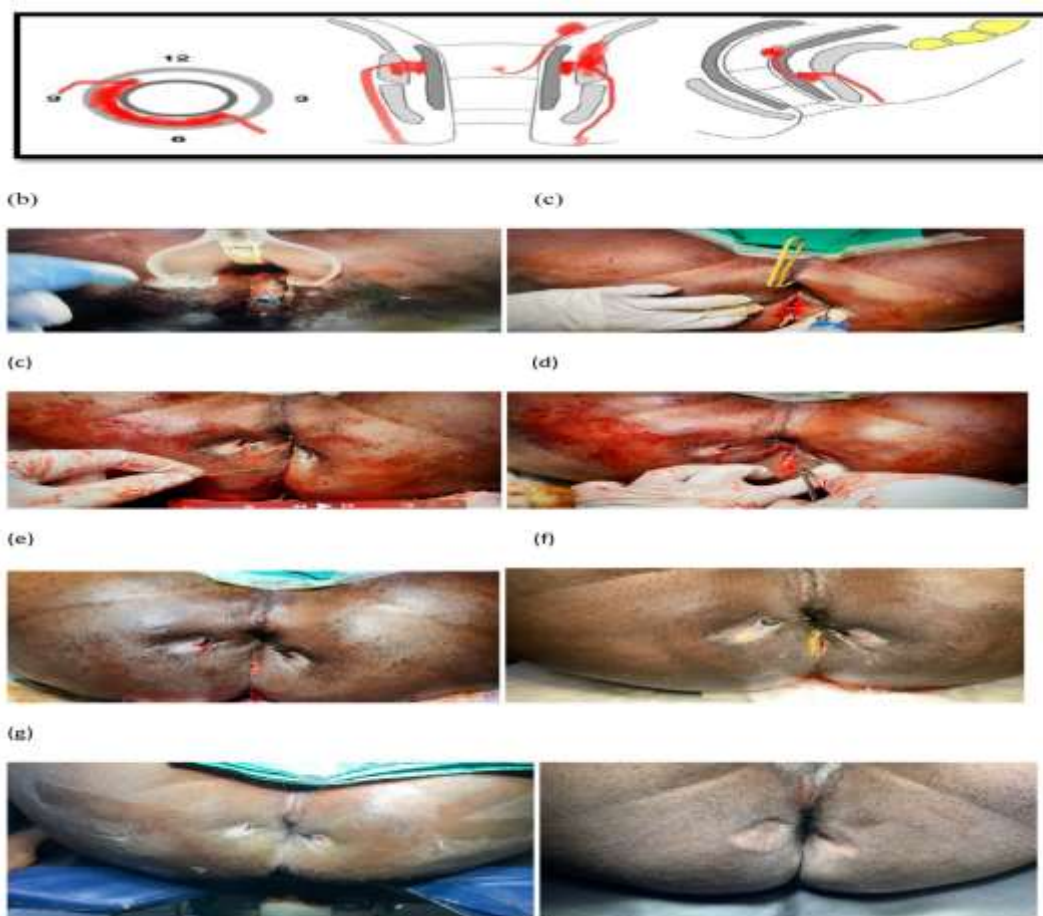


Figure 11: Case 4:- (a) location of fistula in figure. (b) methylene blue infiltration. (c) retrograde probing. (d) Kshara Sutra app. (e) packing window. (f) on table. (g) after 3 weeks. (h) after 2 months. (i) after 5 months.

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Case 5

After receiving Kshara Sutra treatment, the difficult transphincteric fistula in the 54-year-old diabetic patient was fully cured in three months **Figure 12**.

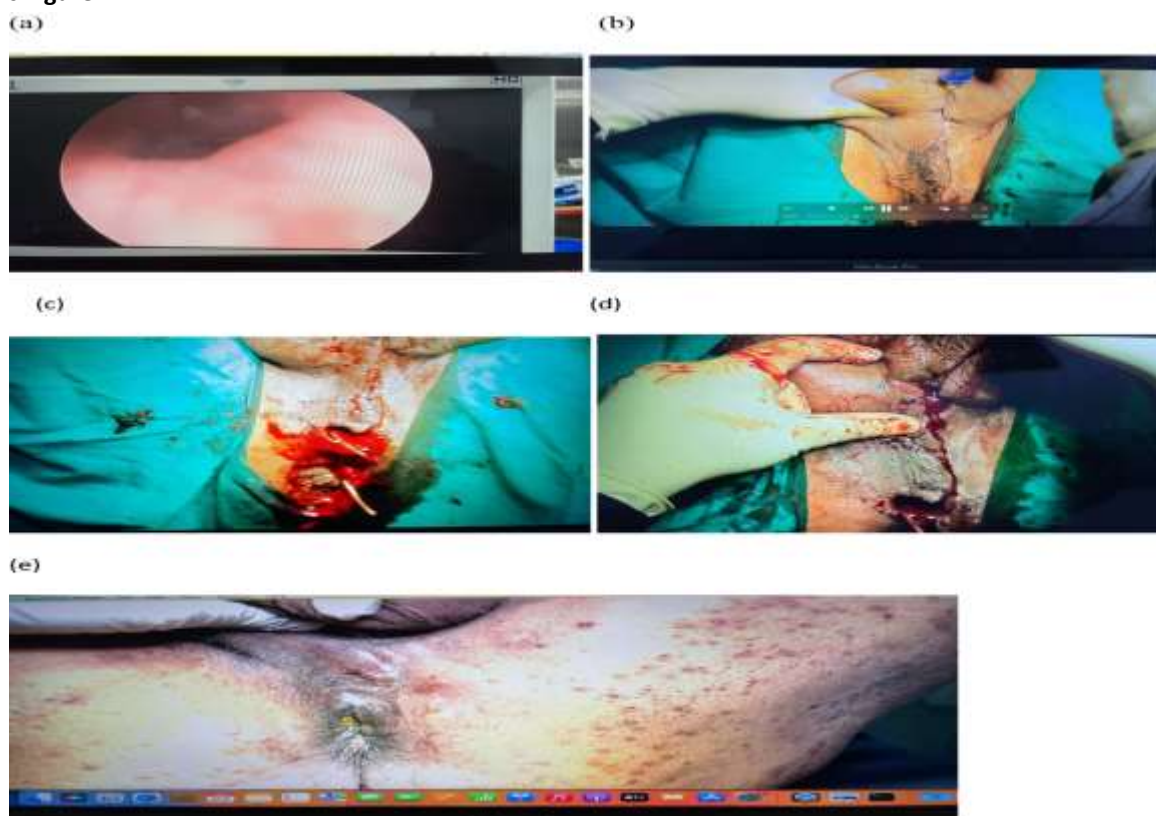


Figure 12: case 5:- (a) cystoscopy. (b) methylene blue infiltration. (c) interception of tract 12 O clock. (d) curetting the fistulla. (e) after 3 months.

Case 6

Following Kshara Sutra therapy, the difficult transphincteric fistula in the 50-year-old patient was fully cured in three months **Figure 13**.

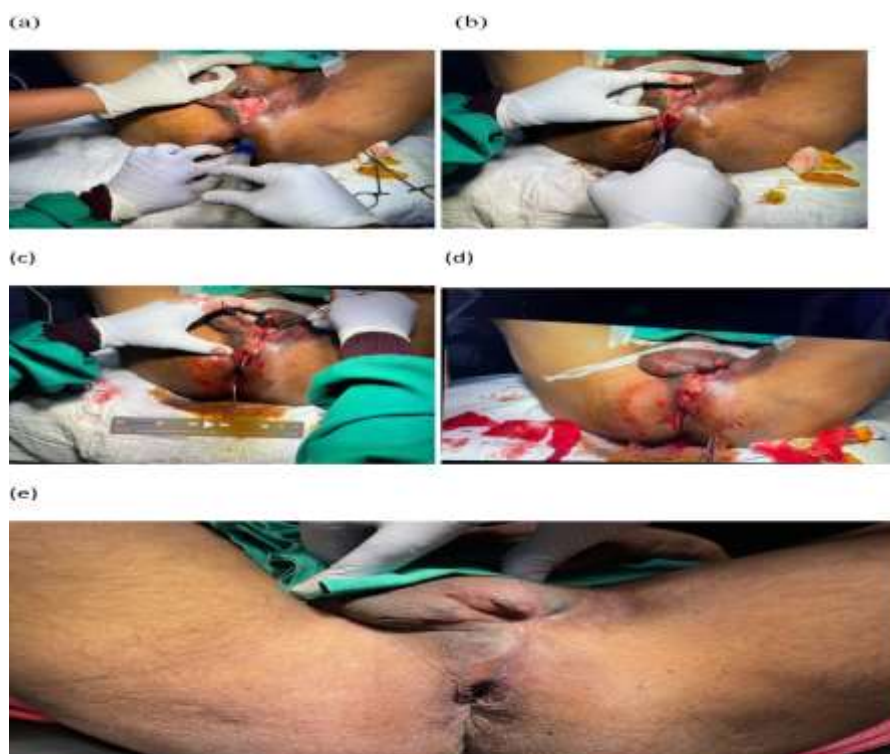


Figure 13: (a) methylene blue infiltration. (b) track interception. (c) curettage of track. (d) Kasahara s. (e) after 3 months.

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Case 7

The fistula in the 47-year-old non-diabetic, non-hypertensive guy entirely healed after Kshara Sutra treatment, leaving no unsightly scar **Figure 14**.

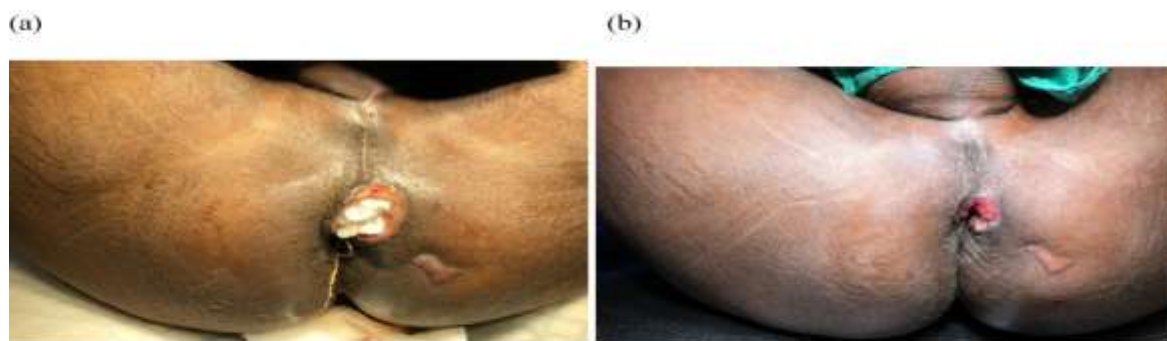


Figure 14: case 7: - (a) after 2 weeks. (b) After 45 days.

Case 8

Within three months of the Kshara Sutra treatment, the transsphincteric fistula in the 32-year-old non-diabetic, non-hypertensive male was fully healed with minimal scarring **Figure 15**.

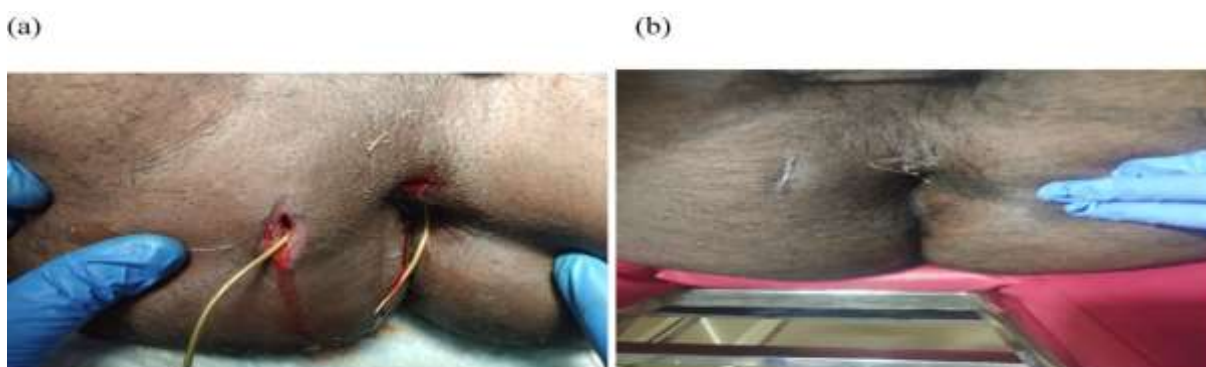


Figure 15: (a) treatment. (b) after one month.

Cases 9

The fistulas in the 52-year-old non-diabetic, non-hypertensive male patients became straightforward intersphincteric fistulas that could be lay open fearlessly after Kshara Sutra therapy

Figure 16.

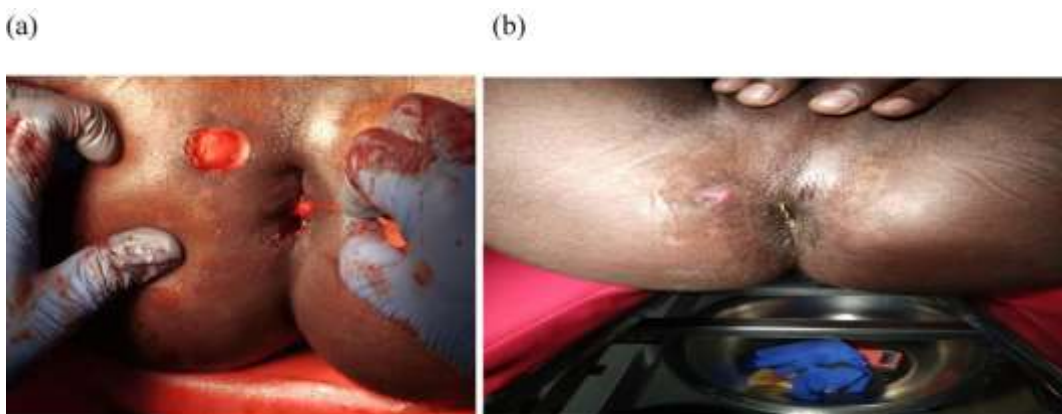


Figure 16:- (a) K. S. (b) after one month.

Case 10

The difficult transsphincteric fistula with several external holes in the 55-year-old man was entirely healed after Kshara Sutra treatment in about three months **Figure 17**.

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Kshara Sutra therapy was used in each of these patients to totally heal the fistulas. Notably, during the follow-up period, no cases of incontinence, recurrence, or other problems were identified in these patients.



Figure 17: (a) K. S. (b) after 2 months. (c) after 3 months.

DISCUSSION

The outcomes of this collection of cases demonstrate the tremendous potential of Kshara Sutra therapy in the treatment of Anorectal transphincteric fistula. All patients who underwent treatment with this method saw full healing of the fistula, a result that is consistent with earlier research showing that Kshara Sutra therapy is helpful in treating difficult anal fistulas[16], [17].

In the first instance, a female patient who was 29 years old and had a high anal transphincteric fistula healed completely after three months. The results of who reported a 92 percent success rate in high anal fistulas are congruent with the findings of this case, which shows that even high, potentially complex fistulas can be successfully managed using Kshara Sutra therapy[18].

This is further supported by the second example, in which a 22-year-old woman with a posterior transphincteric horseshoe fistula completely recovered. This adds to the body of research demonstrating the efficacy of Kshara Sutra therapy in treating horseshoe fistulas, which are notoriously challenging to treat due to their intricate design[19].

In the third instance, a student who was 24 years old and had a fistula that had previously been treated with incision and drainage (I&D) successfully healed completely after four months. This is significant because it suggests that Kshara Sutra therapy, similar to the outcomes described by, can be a successful second-line treatment when conventional approaches like I&D fail[20].

Three males aged 27 had complicated transphincteric horseshoe fistulas in Cases 4. Within a five-month period, everyone recovered. This is in line with the findings of an earlier study and further affirms the efficacy of Kshara Sutra therapy in treating complex fistulas[21].

In case 5, the 54-year-old diabetic patient fully recovered in three months. Given that diabetics frequently suffer with wound healing because of decreased blood circulation and immunological response, this is a very encouraging result[22].

The six to ten remaining instances similarly saw full recovery in two to three months. These cases highlight the adaptability of Kshara Sutra therapy because it was successful independent of the patient's age, the complexity and location of the fistula, or the existence of any co-morbid illnesses[23].

Kshara Sutra treatment is safe because no complications like incontinence or recurrence were recorded in any of the instances. This result is consistent with other research that showed low rates of problems following Kshara Sutra therapy[24].

In relation to example 5, it's critical to note that continuing research is being done on how diabetes affects wound healing and the treatment of fistulas. According to studies, diabetic patients' ability to heal wounds is hampered by conditions such as microvascular disease, neuropathy, impaired leukocyte function, and diminished growth factor production[25]. Despite these obstacles, the present example demonstrated that Kshara Sutra therapy produced positive results, even for a diabetic patient. To determine the efficacy of this medication in this specific patient population, more instances need to be researched[26].

It's important to note that patients in cases 6, 7, and 8 underwent fistula procedures that had failed in the past. Given this, it is notable that Kshara Sutra therapy produced complete recovery, indicating its efficacy as a backup plan for care when other approaches are unsuccessful. This is consistent with a study that found that Kshara Sutra therapy had a success rate of 92.9 percent in patients who had previously had unsuccessful procedures[27].

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Patients in cases 4 and 10 both had complicated transphincteric horseshoe fistulas. Due to their complex structure, such fistulas are frequently difficult to treat and heal. However, it took three to five months for all patients to fully recover. This backs up findings from a research that showed Kshara Sutra therapy was effective for treating individuals with complicated fistulas.

When analysing case 9, it is important to note that the fistula changed over time with the use of Kshara Sutra therapy from a difficult transphincteric fistula to a simple intersphincteric fistula, allowing a simple laying open of the tract[24]. This shows how this therapy has the potential to make the anatomy of complicated fistulas simpler, making subsequent interventions less difficult. Further research is required to fully understand the mechanisms underlying this simplification[21].

Last but not least, one of the main benefits of Kshara Sutra therapy is how quickly the fistulas healed in each case. Traditional fistula treatment techniques frequently entail protracted recuperation periods and increase morbidity. These examples of the benefit of Kshara Sutra therapy show how it can improve patients' quality of life and hasten their return to regular activities[28], [29].

Overall, these findings highlight the Kshara Sutra therapy's potential advantages in treating a variety of fistula presentations, including difficult instances and those that have not responded to other therapies. These results should be combined, and the usefulness of the therapy in other clinical contexts should be investigated in larger, randomised studies[30].

CONCLUSION

Our case series confirms that the Kshara Sutra treatment has the therapeutic ability to manage a range of anal fistulas, from straightforward to complex presentations. Even in patients who had repeated unsuccessful procedures in the past or had complicating conditions like diabetes, we always saw complete closure of the fistulas. Additionally, the length of the treatment was quite brief, resulting in a speedy patient recovery and little interference with their normal routines.

Importantly, no severe adverse events were noticed at any point during the course of the treatment, demonstrating the safety and acceptability of this approach. Additionally, the therapy demonstrated promise in the ability to reduce the complexity of complex fistulas, enabling, if required, more basic surgical operations.

Even though these results are encouraging, it's important to keep in mind that there are just a few patients in this case series. Additional research including bigger patient groups and randomised controlled trials are required in order to establish findings about the efficacy and safety of Kshara Sutra treatment that are more generalizable.

In conclusion, our findings add to the expanding body of research that shows Kshara Sutra therapy is effective in treating anal fistulas. This traditional medical practise may in fact offer a powerful and secure substitute for common surgical procedures, potentially altering how this difficult condition is managed.

Limitations of the Study

Our case series shows promising outcomes for the application of the Kshara Sutra in the treatment of anal fistulas, however there are certain restrictions. First of all, the sample size was very modest, and every patient received care at the same facility. As a result, the findings might not apply to all patients with anal fistulas. Second, there was no control group to use as a benchmark. More rigorous proof of the Kshara Sutra therapy's effectiveness would come from additional randomised controlled trials contrasting it with traditional surgical techniques. Finally, even though every patient said they had fully recovered, longer-term monitoring would be necessary to check for any recurrence.

Future Directions

The results of this study suggest more investigation into Kshara Sutra therapy as a form of anal fistula therapy. To confirm the findings of this study, it would be intriguing to undertake multi-center randomised controlled trials. The precise processes by which the Kshara Sutra promotes wound healing should also be clarified in additional research as this knowledge may help to advance the method and lead to the creation of novel treatments. To evaluate the risk of recurrence after Kshara Sutra therapy, long-term follow-up research would also be helpful.

Acknowledgements

In order to better the lives of others, we would like to convey our gratitude to the patients who took part in this study and volunteered to share their personal experiences. We also thank our colleagues who have contributed knowledge and insight that have considerably aided the research as well as the clinical professionals that cared for these patients.

Declaration of Conflict of Interest

Regarding the research, writing, and publication of this paper, the authors declare that they have no potential conflicts of interest.

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REFERENCES

- 1) H. Abcarian, "Anorectal infection: abscess–fistula," *Clin. Colon Rectal Surg.*, vol. 24, no. 01, pp. 14–21, 2011.
- 2) A. L. K. E. Ali, M. P.-K. Wong, and I. Sagap, "The Value of Cutting Seton for High Transsphincteric Anal Fistula in the Era of Its Misery," *Malaysian J. Med. Sci. MJMS*, vol. 29, no. 1, p. 55, 2022.
- 3) A. Amato *et al.*, "Evaluation and management of perianal abscess and anal fistula: SICCR position statement," *Tech. Coloproctol.*, vol. 24, pp. 127–143, 2020.
- 4) A. Amato *et al.*, "Evaluation and management of perianal abscess and anal fistula: a consensus statement developed by the Italian Society of Colorectal Surgery (SICCR)," *Tech. Coloproctol.*, vol. 19, pp. 595–606, 2015.
- 5) M. Amir, A. K. Singh, and M. Shekhar, "SIMPLIFIED TREATMENT FOR DIVERSIFIED FISTULA IN ANO," 2021.
- 6) P. Bapat, V. Bapat, and D. S. Phalgune, "Pilonidal sinus extended to create transsphincteric anal fistula treated by Kshara Sutra (A medicated herbal seton) without antibiotics: A rare case report," *Indian J. Colo-Rectal Surg.*, vol. 4, no. 3, pp. 73–75, 2021.
- 7) S. Bhusari, K. Nikam, and P. Wakte, "Anal fistula: a comprehensive review," *Pharma Innov. J.*, vol. 8, no. 1, pp. 201–208, 2019.
- 8) A. M. Alwan, D. Rokaya, G. Kathayat, and J. T. Afshari, "Onco-immunity and therapeutic application of amygdalin: A review," *J. Oral Biol. Craniofacial Res.*, 2022.
- 9) A. H. Demirel and K. Seyfettin, "Silver nitrate cauterization for anal fistulas with high blind tract chemical therapy in complicated anal fistulas," *Euroasian J Hepato-Gastroenterol*, vol. 3, pp. 49–53, 2013.
- 10) K. Faridi, P. Sreenadh, V. Mahanta, and R. Sherkhane, "Management of transsphincteric fistula-in-ano by modified conventional Ksharasutra therapy: A case report," *J. Ayurveda Case Reports*, vol. 4, no. 3, p. 95, 2021.
- 11) D. C. Goan, "A COMPERATIVE STUDY OF LIGATION OF INTERSPHINCTERIC FISTULA TRACT (LIFT) WITH CONVENTIONAL TREATMENT OF KSHARASUTRA THERAPY IN THE MANAGEMENT OF FISTULA IN ANO: A CLINICAL STUDY," 2021.
- 12) D. C. Goan, "SPHINCTER TONE OF PATIENTS WITH FISTULA-IN-ANO TREATED BY KSHARASUTRA THERAPY WITH THE HELP OF HIGH RESOLUTION ANAL MANOMETRY: A CLINICAL STUDY," 2021.
- 13) T. M. Hammond and P. J. Lunniss, "Principles and contemporary management of anal fistulas," *Gastrointest. Nurs.*, vol. 5, no. 2, pp. 32–40, 2007.
- 14) K. S. Ho *et al.*, "Prospective randomised trial comparing ayurvedic cutting seton and fistulotomy for low fistula-in-ano," *Tech. Coloproctol.*, vol. 5, pp. 137–141, 2001.
- 15) M. IBRAHIM, M. YASSER, and A. SALEM, "Retrospective Evaluation of Outcome of Rerouting Technique in Management of Horseshoe Perianal Fistula, Single Institution Experience," *Med. J. Cairo Univ.*, vol. 89, no. June, pp. 505–511, 2021.
- 16) L. Kalal and A. Kembhavi, "A comparative clinical study on the effect of Vibhitaki Ksharasutra and Apamarga Ksharasutra in the management of Bhagandara (Fistula-In-Ano)," *J. Ayurveda Integr. Med. Sci.*, vol. 3, no. 06, pp. 11–16, 2018.
- 17) S. Lalhruaizela, "Endofistula laser ablation of fistula-in-ano: a new minimally invasive technique for the treatment of fistula-in-ano," *Ann. Coloproctol.*, vol. 38, no. 4, pp. 301–306, 2021.
- 18) J. Martellucci and M. L. Vuolo, "The Seton in Anal Fistula Management," *Anal Fistula Abscess*, pp. 1–14, 2020.
- 19) A. A. A. MB and M. H. Patel, "Management of high anal Fistula by Kshar Sutra," *Texas J. Med. Sci.*, vol. 13, pp. 124–131, 2022.
- 20) H. Nazari *et al.*, "Advancing Standard Techniques for Treatment of Perianal Fistula; When Tissue Engineering Meets Seton: When tissue engineering meets seton for perianal fistula," *Heal. Sci. Rev.*, p. 100026, 2022.
- 21) A. Ommer *et al.*, "German S3 guidelines: anal abscess and fistula (second revised version)," *Langenbeck's Arch. Surg.*, vol. 402, pp. 191–201, 2017.
- 22) H. K. Panigrahi, M. R. Rani, and M. M. Padhi, "Clinical Evaluation of Kshara sutra Therapy in the management of Bhagandara (Fistula-in-Ano)-A prospective study," *Anc. Sci. Life*, vol. 28, no. 3, p. 29, 2009.
- 23) A. A. J. Pushpakumara and D. J. Anthony, "Anal manometry study in guggulu based kshara sutra in the management of fistula in ano," *SLJIM*, p. 16.
- 24) B. RajaRam, A. Upendar, D. R. Kumar, M. Venkanna, and R. J. Prasad, "Combined Therapy Approach of Treatment for Complex Anal Fistula: A Prospective Study," *J. Chalmeda Anand Rao Inst. Med. Sci. Vol*, vol. 7, no. 1, 2014.
- 25) P. B. Ramesh, "Anal fistula with foot extension—Treated by kshara sutra (medicated seton) therapy: A rare case report," *Int. J. Surg. Case Rep.*, vol. 4, no. 7, pp. 573–576, 2013.
- 26) J. A. Rizzo, A. L. Naig, and E. K. Johnson, "Anorectal abscess and fistula-in-ano: evidence-based management," *Surg. Clin.*, vol. 90, no. 1, pp. 45–68, 2010.
- 27) A. de S. Rós, C. H. M. dos Santos, D. M. Dourado, M. S. da Silva-Neto, I. Caldeira, and L. de O. Furtado, "Can

Revolutionizing Fistula Treatment: A Case Series on the Application of Kshara Sutra Therapy

stryphnodendron adstringens extract improve the results of fistulotomy followed by primary sphincteroplasty in the treatment of transsphincteric fistulae?," *ABCD. Arq. Bras. Cir. Dig. (São Paulo)*, vol. 33, 2020.

- 28) P. K. M. Shankar, G. N. SreeDeepthi, K. S. Rohit, and G. K. Swamy, "Ayurvedic management of fistula in ano: A systematic review protocol," *J Res Ayurvedic Sci*, vol. 3, pp. 100–105, 2019.
- 29) G. Subhas, J. Singh Bhullar, A. Al-Omari, A. Unawane, V. K. Mittal, and R. Pearlman, "Setons in the treatment of anal fistula: review of variations in materials and techniques," *Dig. Surg.*, vol. 29, no. 4, pp. 292–300, 2012.
- 30) Q. Wang, Y. He, and J. Shen, "The best surgical strategy for anal fistula based on a network meta-analysis," *Oncotarget*, vol. 8, no. 58, p. 99075, 2017.



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Characterization of Chitosan-Based Active Film Incorporating with Gallic Acid



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ABSTRACT: This study aims to investigate the effects of different gallic acid contents (0, 0.5, 1.0, and 1.5 mM) on the thickness (μm), moisture content (MC, %), water solubility (WS, %), water vapor permeability (WVP, $\text{mg mm/m}^2 \text{ h kPa}$), and antioxidant activity (mg Trolox equivalent (TE)/g dry film) of chitosan films. The films were prepared from chitosan (1% w/v) combined with gallic acid to reach the concentrations of 0 (control), 0.5 (GA1), 1.0 (GA2), and 1.5 mM (GA3). The thickness of the gallic acid incorporated chitosan films was not significantly different. It was in the range of 33.267 ± 9.430 to $45.100 \pm 10.484 \mu\text{m}$, with the overall average of $38.225 \mu\text{m}$. Chitosan films with various gallic acid contents expressed similar WS, at 3.699 % in terms of overall mean. Significant differences were observed in the MC, WVP, and antioxidant capacity expressed as DPPH radical scavenging activity of the gallic acid-chitosan films. The lowest MC was found in chitosan film with 1.0 mM gallic acid (GA2) (21.042 ± 1.979 %), whereas the highest was the sample with 0.5 mM gallic acid (GA1) (32.046 ± 0.854 %). As the level of gallic acid elevated, WVP of the films declined but their DPPH radical scavenging activity enhanced significantly. GA3 was chosen as the best treatment since the chitosan films at 1.5 mM gallic acid demonstrated the lowest WVP and highest antioxidant activity, at $0.833 \text{ mg mm/m}^2 \text{ h kPa}$ and $13.548 \text{ mg TE/g dry film}$, respectively.

KEYWORDS: active film, chitosan, gallic acid, water vapor permeability, DPPH scavenging

I. INTRODUCTION

In recent years, traditional packaging is made from plastic materials that are widely used in food industry in order to preserve and protect food. Although plastics have been one of the most common packaging materials due to its convenience, availability, lightweight, low price and processing properties, the utilization of synthetic packaging films is witnessing a significant increase in the universal problems. From the manufacturing of plastic materials, there are a huge amount of fossil fuels consuming finite and non-renewable resources. The disposal of plastic is not biodegradable and takes thousands of years to decompose resulting in pollution and harm to animals as well as humans [1]. To solve the problems generated by plastic waste, environmentally friendly materials, known as innovative packaging, have been researched and developed as alternatives. The active biodegradable film is one kind of intelligent packaging with the addition of additives to improve protective properties of packaging as well as to extend the product's shelf life.

The biopolymers are commonly available for biodegradability for making edible film, biodegradable packaging. Chitosan is a kind of linear cationic polymer made from the deacetylation of chitin, a naturally occurring polysaccharide. The chemical structure of chitosan is a random linear polysaccharide, consisting of β -(1,4)-N-acetyl-D-glucosamine and β -(1,4)-D-glucosamine [2]. Chitosan is poorly soluble in water as its limitation although chitosan has a high biological activity with wide applications. Chitosan has been investigated a lot in the food packaging industry because of its film-forming properties and biological capabilities, such as biodegradability, biocompatibility, and nontoxicity [3, 4].

In order to enhance properties of the packaging, the additive compounds can be blended composition. The natural materials and agent compounds from animal and plant sources are significantly increased in science research. The chitosan-based coatings were investigated by adding polyphenols, are well-known as natural antioxidants. Gallic acid (3,4,5-trihydroxybenzoic acid, or GA), is a common polyphenolic molecule and an abundant phenolic acid [5]. It is commonly found in tea, nuts, wine, fruits, and vegetables, such as tea leaves, grapes, cherries, and longan seeds. Gallic acid is a non-toxic material and plays roles as a cross-linking agent and antioxidant. Gallic acid is a potential material in order to develop active biodegradable packaging. Gallic acid was observed to improve mechanical properties such as elongation at break, reduce UV absorption, and enhance antioxidant activities measured by radical scavenging assay and the ferric reducing ability on the research of gelatin-based films [6].

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Therefore, the objectives of the research are to investigate the incorporation of various gallic acid contents (0, 0.5, 1.0, and 1.5 mM) into chitosan-based films. Furthermore, determination of the effect of gallic acid on physical properties of films such as moisture content, water solubility, water vapor permeability, as well as the antioxidant properties of films were tested.

II. MATERIALS AND METHODS

A. Materials

Chitosan was purchased from local company in Ninh Thuan province had a medium molecular weight with degree of deacetylation of 75-85%, viscosity 200- 800 cP, ash content $\leq 1.0\%$, moisture content $\leq 10\%$, and solubility in acidic solution. Gallic acid 2,2-diphenyl-1-picrylhydrazyl (DPPH), Trolox were purchased from Sigma (USA). Magnesium nitrate, sodium chloride, calcium chloride, and glycerol, acetic acid, methanol were purchased from Xylong, China. All other reagents used were of analytical grade.

B. Film formation

Chitosan solution (1%, w/v) was prepared following modified method of Ge et al. [7], by dissolving chitosan in an aqueous solution of acetic acid (2%, w/w) at 25 °C and stirring with a magnetic stirrer (MSH-20A, Daihan, Korea) for 4 h. After that, 30% glycerol (w/w chitosan) was added as the plasticizer and the solution was stirred for 1 h. Then gallic acid was added into solutions to reach a final concentration of 0.5, 1.0, and 1.5 mM, labelled as GA1, GA2, and GA3, respectively. The film without gallic acid was a control sample. All the solutions were homogenized by using a centrifuge (Universal 320R, Hettich, Germany) at 3,500 rpm for 10 min, in order to remove undissolved particles. Finally, these film-forming solutions were casted over the petri dishes and dried at 25 °C for 48 h. Then, the dried films were carefully peeled from the plates and stored with Mg (NO₃)₂ saturated solution (50 % relative humidity) for 24 h at 25 °C before further tests.

C. Characterization of the films

1) The thickness of film:

The film thickness was measured by using a digital micrometer at ten random positions along the samples. The mean values were used to calculate.

2) Moisture content and water solubility:

Moisture content (MC) and water solubility (WS) of the films were evaluated according to previously reported method of Ge et al. [7]. The film strips (2 cm × 2 cm) were accurately weighed (W_0) and dried in a vacuum drying oven at 105 °C for 24 h after which they were reweighed (W_1). The dried film was then placed in a tube which was filled with 30 mL distilled water and kept for 24 h at room temperature. Finally, the undissolved film was recovered and dried at 50 °C for 24 h and weighed as W_2 . The film MC and WS were calculated as follows:

$$\text{Moisture content (\%)} = \frac{(W_0 - W_1)}{W_2} \times 100$$

$$\text{Water solubility (\%)} = \frac{(W_1 - W_2)}{W_1} \times 100$$

where W_0 (g) was the initial mass of the film sample, W_1 (g) was the weight of the dry initial film sample and the W_2 (g) was the final dry mass of the film sample.

3) Water vapor permeability:

The water vapor permeability (WVP) of the films was determined gravimetrically according to the method of Siripatrawan and Harte [8]. Film samples was sealed to special cups containing silica gel in order to provide 0% RH, then placed into a desiccator at room temperature and 95% RH maintained by saturated NaCl solution. The cup was weighed periodically (everyday) using a 4-digital analytical balance with a precision of 0.1 mg until steady state was reached. The water vapor transmission rate (WVTR) of the films was determined from the plot of weight gained versus time. The slope of the linear portion of this plot was represented the steady state amount of water vapor diffusing through the film per unit time. The slope was a regression coefficient of 0.99 or greater. The WVP of the films was calculated by multiplying the WVTR with the film thickness and dividing that by the water vapor pressure difference across the films. This test was conducted triplicate. The WVTR and WVP was determined by using the following equations:

$$WVTR = \frac{\Delta w}{A \Delta t}$$

$$WVP = WVTR \frac{x}{\Delta p}$$

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where WVP is the water vapor permeability coefficient ($\text{g mm m}^{-2} \text{ h}^{-1} \text{ kPa}^{-1}$), x is the film thickness (mm), Δp is the partial water vapor pressure gradient between the inner (p_1) and outer (p_2) surface of the film in the chamber (kPa).

4) DPPH radical scavenging activity:

The samples for measurement of antioxidant properties were prepared by following the method of Ballester-Costa with modification [9]. Each film sample (0.01 g) was extracted in 15 mL of methanol absolute. The mixture was shaken for 1 min and then left for 30 min. Then, the mixture was used to determine the antioxidant properties by applied DPPH assay.

The measurement of the DPPH radical scavenging activity was modified from the methodology described by Siripatrawan and Harte [8]. Briefly, 4 mg of DPPH was dissolved in 100 ml of methanol to obtain a concentration of 0.1 mM/ml. Subsequently, 0.1 ml of film extracted solution was mixed with 4.9 mL of 0.1 mM methanolic solution of DPPH. The mixture was vortexed using a vortex for 1 min and incubated in the dark at ambient temperature for exactly 30 min. The absorbance of the mixture was then measured at 517 nm using a spectrophotometer. Trolox solutions in the specific concentration range (0, 0.2, 0.4, 0.6, 0.8, and 1.0 mM) were used to construct a calibration curve. The concentration of free radical scavenging compounds in the samples was expressed in mg of Trolox equivalents (TE) per gram dry weight of the film sample, calculated by using an equation that was obtained from the standard graph. This estimation of free scavenging compounds in the samples was analyzed in three replications, and the results were averaged. The percentage of DPPH free radical quenching activity was determined using the following equation:

$$\text{DPPH scavenging effect(\%)} = \frac{A_{\text{DPPH}} - A_s}{A_{\text{DPPH}}} \times 100$$

where A_{DPPH} is the absorbance value of the methanolic solution of DPPH and A_s is the absorbance value of the sample extracts.

D. Data analysis

Statistical analysis was conducted by analysis of variance (ANOVA), and the significance of each mean value was evaluated with Fisher's multiple range tests using the Minitab software at a level of confidence of 95%. All experimental data was expressed as mean \pm standard deviation (SD).

III. RESULTS AND DISCUSSION

A. Photographs and the thickness of films

The figure 1 shows all the types of film samples. The control chitosan films were the most transparent among all samples. The average thickness values of chitosan-based films with various concentrations of gallic acid were in the range from 33.267 ± 9.430 to $45.100 \pm 10.484 \mu\text{m}$ as can be seen in the table 1. The films thickness in all samples was not significantly different ($P \geq 0.05$). This indicates that the incorporation of gallic acid into chitosan-based film did not affect the change of films thickness. Liu et al. and Wu et al. also showed that the thickness of film incorporated with different phenolic acids were similar to the samples [10,11].



Figure 1. Photographs of films, control, GA1, GA2, and GA3, respectively.

B. Moisture content and water solubility

The moisture content and water solubility of the films may be used to evaluate their water resistance, which is one of the most important factors affecting chitosan films in the food industry.

The moisture contents of chitosan film and chitosan films incorporating with gallic acid were shown in Table 1. The increase of incorporating concentration of gallic acid led to a significant decrease ($p < 0.05$) in the moisture content of films from $32.046 \pm 0.854 \%$ to $21.042 \pm 1.979 \%$. However, there were no significant differences between the control and the GA1 film, the GA2 film and GA 3 film. According to Aljawish at al., the strong hydrogen bond interactions between water molecules and hydroxyl group -OH and amine group -NH₂ of chitosan led to the high moisture content of chitosan film [12]. Moreover, higher concentration of

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gallic acid added could cause less hydrogen bond interactions. Therefore, chitosan-gallic acid films showed relatively lower moisture contents than the control chitosan film.

The table 1 demonstrates that the water solubility of films incorporated with gallic acid were not significantly different ($p > 0.05$) with the increase of gallic acid content. The water vapor values of all kinds of film samples were fluctuated from 3.336 ± 0.150 to 4.045 ± 0.580 %. The higher water solubility of the gallic acid-embedded films might be due to the presence of hydrophilic group in chitosan. The lower solubility would indicate higher water resistance; thus, the chitosan films combined with gallic acid might improve the limitation of pure chitosan films in liquid food applications. According to the research of Wang et al., phenolic compounds could lower the availability of hydroxyl and amino groups in chitosan, and thus limit the chitosan and water interactions [13].

Table 1. Thickness, moisture content and water solubility of chitosan film incorporating with various concentrations of gallic acid

Gallic Acid Content (mM)	Thickness (μm)	Moisture Content (%)	Water Solubility (%)
0	33.733 ± 5.845^a	31.821 ± 0.786^a	4.045 ± 0.580^a
0.5	33.267 ± 9.430^a	32.046 ± 0.854^a	3.555 ± 0.222^a
1.0	40.800 ± 6.798^a	21.042 ± 1.979^b	3.740 ± 0.125^a
1.5	45.100 ± 10.484^a	22.171 ± 0.837^b	3.336 ± 0.150^a

Values are given as mean \pm standard deviation (SD). Different letters in the same column indicate significantly different ($p < 0.05$).

C. Water vapor permeability

Water vapor permeability (WVP) represents the amount of water vapor passing through a material per unit area per unit time per unit barometric pressure. This is an important property in order to decide the appropriate food products for each packaging material. As shown in figure 2, the WVP decreased from 1.631 ± 0.130 to 0.833 ± 0.015 mg mm/ m² h kPa as the concentration of gallic acid increased into the chitosan matrix. The results showed that the WVP of the films significantly decreased ($p \geq 0.05$) with the effect of the incorporation of gallic acid. The gallic acid-chitosan films at the concentration of 1.0 and 1.5 mM (GA2 and GA3, respectively) expressed the lowest WVP values, at an average WVP value was 0.878 mg mm/ m² h kPa, which indicates the desirable property of food packaging. Similar results were also observed by many other researchers when incorporating other phenolic acid with chitosan films, such as gallic acid [6, 14], ferulic acid [1, 15, 16].

The increase in concentration of gallic acid into the chitosan film produced the films to become denser and less water vapor permeability. The decrease in WVP indicated the improved barrier property of gallic acid incorporating with chitosan-based film. The deterioration of barrier properties in water vapor was related to the hydrophilicity of chitosan [17]. The covalent bonding of gallic acid into the chitosan showed the limitation of the behavior of chitosan, decreased the affinity of gallic acid-chitosan films toward water [18]. Furthermore, the network between the benzene ring groups in gallic acid obstructed the inter- and intra-molecular hydrogen bond with chitosan, that caused the decrease in WVP [11].

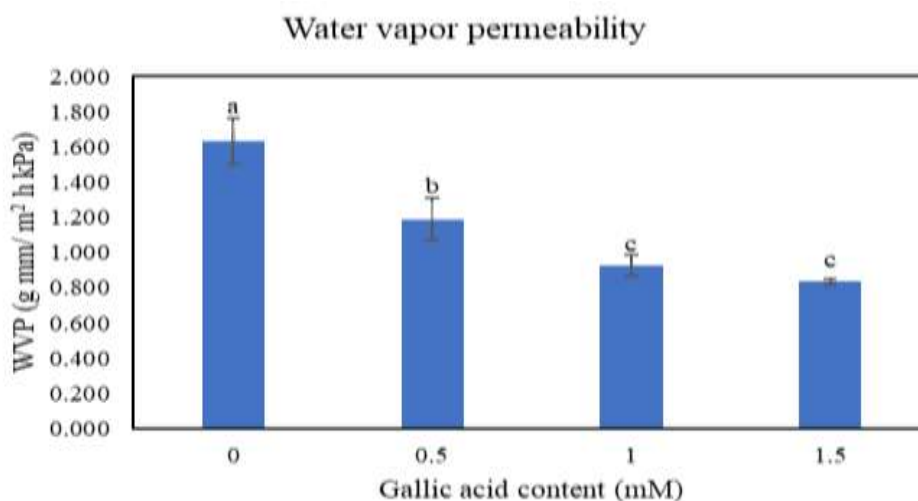


Figure 2. The water vapor permeability of chitosan film incorporating with various concentrations of gallic acid. Different letters indicate significantly different ($p < 0.05$).

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D. DPPH radical scavenging activity

In the DPPH test, the DPPH radical reacted with free radicals in the samples to change color from purple to a yellow-colored compound, diphenylpicrylhydrazine, and the extent of the reaction depends on the hydrogen donating ability of the antioxidants.

The results showed that DPPH scavenging activity of the films were significant differences ($p < 0.05$). The control film containing only chitosan had the lowest DPPH radical scavenging capacity, at 1.743 ± 0.357 mM TE/g dry film. However, the chitosan films without gallic acid did not show the significant difference in DPPH scavenging activity as compared to the chitosan film containing 0.5 mM gallic acid, in the range of 1.743 to 2.218 mM TE/g dry film. By contrast, the presence of phenol products onto chitosan improved the antioxidant properties [12], which means chitosan films incorporating with gallic acid exhibited much higher DPPH radical scavenging activity than the films without the addition of gallic acid. Moreover, the DPPH radical scavenging activity of gallic acid combined films increased with the increase of the gallic acid content. The DPPH scavenging activity of gallic acid films incorporating with chitosan increased from 2.218 ± 0.358 to 13.548 ± 1.878 mM TE/g dry film with increasing gallic acid content concentration as shown in Figure 3. The values of the gallic acid-chitosan films at the concentration of 1.0 and 1.5 mM were increased approximately 3.5 and 5 folds as compared to that of the lower concentration of gallic acid incorporating in chitosan film (0.5 mM), respectively. The research of Wu et al. also reported the similarity in antioxidant activity that gallic acid grafted to chitosan films were higher antioxidant activity with the increase in the grafting ratio of gallic acid [11]. There were some previous studies that observed the same increase trend in antioxidant activity [10, 12, 13].

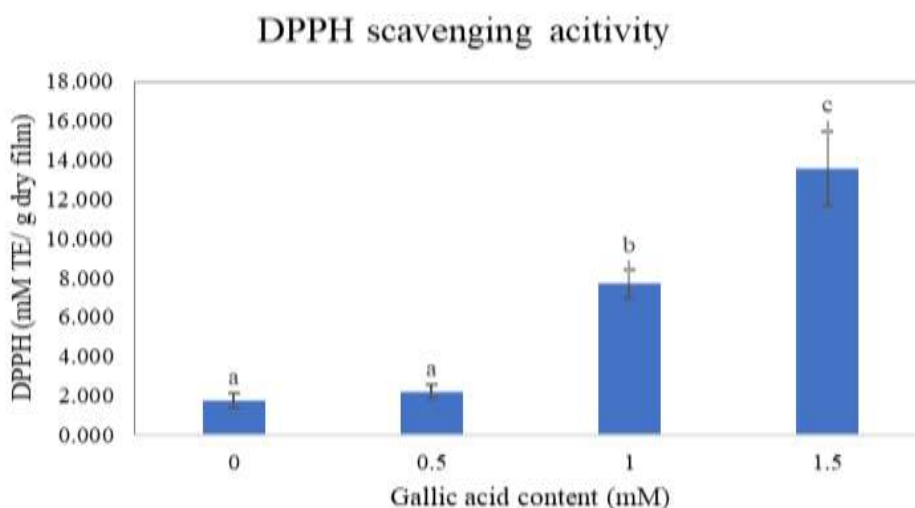


Figure 3. The DPPH scavenging activity of chitosan film incorporating with various concentrations of gallic acid. Different letters indicate significantly different ($p < 0.05$).

The chitosan's scavenging process is based on the the reactions between free radicals with the remaining free amino groups in chitosan to produce stable macromolecule radicals, and these amino groups then could absorb a hydrogen ion from the solution to form ammonium groups [19]. Woranuch and Yoksan explained that the interaction between free radicals and the hydroxyl groups at the C3 or C6 positions, as well as the amino groups at the C2 position, should be linked to the antioxidant activity of chitosan film [17]. Therefore, the higher incorporating gallic acid contents contributes to the more effective antioxidant activity of gallic acid-chitosan films.

V. CONCLUSIONS

In this study, gallic acid was incorporated into chitosan films at four concentrations of 0, 0.5, 1.0, and 1.5 mM to investigate its effects on the thickness, moisture content, water solubility, water vapor permeability, and antioxidant activity of the films. The addition of gallic acid exerted no impacts on the thickness and WS of the chitosan films. The MCs of chitosan films at 1.0 and 1.5 mM gallic acid were significantly lower than those of 0.5 mM gallic acid samples and control. The WVP of the control was nearly double the values of 1.0 and 1.5 mM gallic acid samples. The chitosan films at 1.0 and 1.5 mM gallic acid exhibited 3.5- and 5-fold DPPH radical scavenging activity compared with the film containing 0.5 mM gallic acid. It is concluded that chitosan film containing 1.5 mM gallic acid was the best treatment with the lowest WVP and highest antioxidant capacity.

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REFERENCES

- 1) Sharma, S., Jaiswal, A. K., Duffy, B., & Jaiswal, S. (2020). Ferulic acid incorporated active films based on poly (lactide)/poly (butylene adipate-co-terephthalate) blend for food packaging. *Food packaging and shelf life*, 24, 100491.
- 2) Rollini, M., Mascheroni, E., Capretti, G., Coma, V., Musatti, A., & Piergiovanni, L. (2017). Propolis and chitosan as antimicrobial and polyphenols retainer for the development of paper based active packaging materials. *Food Packaging and Shelf Life*, 14, 75-82.
- 3) Bera, D., Lahiri, D., & Nag, A. (2006). Studies on a natural antioxidant for stabilization of edible oil and comparison with synthetic antioxidants. *Journal of Food Engineering*, 74(4), 542-545.
- 4) Choe, E., & Min, D. B. (2009). Mechanisms of antioxidants in the oxidation of foods. *Comprehensive reviews in food science and food safety*, 8(4), 345-358.
- 5) Thanyacharoen, T., Chuysinuan, P., Techasakul, S., Nooeaid, P., & Ummartyotin, S. (2018). Development of a gallic acid-loaded chitosan and polyvinyl alcohol hydrogel composite: Release characteristics and antioxidant activity. *International journal of biological macromolecules*, 107, 363-370.
- 6) Limpisophon, K., & Schleining, G. (2017). Use of gallic acid to enhance the antioxidant and mechanical properties of active fish gelatin film. *Journal of food science*, 82(1), 80-89.
- 7) Ge, L., Zhu, M., Li, X., Xu, Y., Ma, X., Shi, R., et al. (2018). Development of active rosmarinic acid-gelatin biodegradable films with antioxidant and long-term antibacterial activities. *Food Hydrocolloids*, 83, 308-316.
- 8) Siripatrawan, U., & Harte, B. R. (2010). Physical properties and antioxidant activity of an active film from chitosan incorporated with green tea extract. *Food Hydrocolloids*, 24(8), 770-775.
- 9) Ballester-Costa, C., Sendra, E., Fernández-López, J., & Viuda-Martos, M. (2016). Evaluation of the antibacterial and antioxidant activities of chitosan edible films incorporated with organic essential oils obtained from four *Thymus* species. *Journal of food science and technology*, 53(8), 3374-3379.
- 10) Liu, J., Meng, C.-g., Liu, S., Kan, J., & Jin, C.-h. (2017). Preparation and characterization of protocatechuic acid grafted chitosan films with antioxidant activity. *Food hydrocolloids*, 63, 457-466.
- 11) Wu, C., Li, Y., Wang, L., Hu, Y., Chen, J., Liu, D., et al. (2016). Efficacy of chitosan-gallic acid coating on shelflife extension of refrigerated pacific mackerel fillets. *Food and Bioprocess Technology*, 9(4), 675-685.
- 12) Aljawish, A., Muniglia, L., Klouj, A., Jasniewski, J., Scher, J., & Desobry, S. (2016). Characterization of films based on enzymatically modified chitosan derivatives with phenol compounds. *Food hydrocolloids*, 60, 551-558.
- 13) Wang, L., Dong, Y., Men, H., Tong, J., & Zhou, J. (2013). Preparation and characterization of active films based on chitosan incorporated tea polyphenols. *Food hydrocolloids*, 32(1), 35-41.
- 14) Liu, J., Liu, S., Zhang, X., Kan, J., & Jin, C. (2019). Effect of gallic acid grafted chitosan film packaging on the postharvest quality of white button mushroom (*Agaricus bisporus*). *Postharvest Biology and Technology*, 147, 39-47.
- 15) Mathew, S., & Abraham, T. E. (2008). Characterisation of ferulic acid incorporated starch–chitosan blend films. *Food hydrocolloids*, 22(5), 826-835.
- 16) Woranuch, S., Yoksan, R., & Akashi, M. (2015). Ferulic acid-coupled chitosan: Thermal stability and utilization as an antioxidant for biodegradable active packaging film. *Carbohydrate Polymers*, 115, 744-751.
- 17) Woranuch, S., & Yoksan, R. (2013). Eugenol-loaded chitosan nanoparticles: I. Thermal stability improvement of eugenol through encapsulation. *Carbohydrate Polymers*, 96(2), 578-585.
- 18) Siripatrawan, U., & Vitchayakitti, W. (2016). Improving functional properties of chitosan films as active food packaging by incorporating with propolis. *Food hydrocolloids*, 61, 695-702.
- 19) Je, J.-Y., Park, P.-J., & Kim, S.-K. (2004). Radical scavenging activity of hetero-chitooligosaccharides. *European Food Research and Technology*, 219(1), 60-65.



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Wages Divergence and Malfeasance with Tea Garden Workers in Bangladesh: A Comparative Analysis with Suggestion for the Policymakers



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ABSTRACT: The research "Wages Divergence and Malfeasance with Tea Garden Workers in Bangladesh: A Comparative Analysis with Suggestions for Policymakers" aims to explore the wage disparity and malpractice issues among tea garden workers in Bangladesh. Using a comparative analysis, the study examines the differences in wages among tea garden workers and identifies malfeasance in the sector. The study finds that wage disparity exists among tea garden workers, with women workers receiving lower wages compared to their male counterparts. Moreover, the study identifies malpractices such as bribery, illegal wage deductions, and the use of child labor in the tea garden sector. It provides policy suggestions such as increasing the minimum wage rate, ensuring transparency in wage payment, and enforcing laws to eradicate malfeasance in the sector. It also highlights the need for policymakers to address the wage disparity and malpractices in the tea garden sector to ensure the welfare of tea garden workers in Bangladesh. Study finds that tea garden workers who are members of trade unions receive higher wages compared to non-unionized workers. It further identifies the impact of climate change on the tea garden sector in Bangladesh. The research highlights the need for a gender-sensitive approach to address the wage disparity among tea garden workers. It recommends that policymakers adopt measures to promote gender equity in the sector, such as providing training and education opportunities for women workers.

KEYWORDS: Wages Divergence, Malfeasance with Tea Garden Workers, Child Labor, Labor Laws and Regulations, Living conditions of tea garden workers

A. INTRODUCTION

The tea industry is one of the most significant sectors of the Bangladesh economy, employing thousands of workers and generating substantial export earnings. Despite the industry's importance, however, the tea garden workers in Bangladesh often experience low wages, poor working conditions, and malfeasance, which can result in significant economic and social vulnerabilities (Bangladesh Tea Board, 2015).

Wages divergence and malfeasance are pervasive issues in the tea industry in Bangladesh, affecting the livelihoods and well-being of tea garden workers and their families. Tea garden workers are often paid low wages and have little or no access to social protections, which can exacerbate poverty and food insecurity (Aljazeera, 2022). Moreover, malfeasance, such as forced labor, child labor, and discrimination against women, is prevalent in the tea industry in Bangladesh, creating further vulnerabilities for tea garden workers.

The issues of wages divergence and malfeasance in the tea industry in Bangladesh are complex and multi-faceted, requiring comprehensive and sustained efforts by multiple stakeholders to address them. In this context, it is crucial to prioritize the needs and rights of tea garden workers and to work towards building a more just and equitable tea industry for all stakeholders involved (Begum et al., 2022).

B. LITERATURE REVIEW

The aspects of the research primarily focuses on the untouched and neglected perspective on the Wages Divergence and Malfeasance with Tea Garden Workers in the context of Bangladesh. There are a number of research articles and proposals on

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the very similar arena, nonetheless those articles are not completed in many aspects and there are also different gaps which should be brought into the light. This research paper has been designed to fulfill the existing gaps as much as possible.

Alam M. and Akter S., focused on Bangladesh's scenario in the tea industry and competitiveness of Bangladesh with other producers in their paper, titled "Tea Production and Trade Advances in Bangladesh: A Comparative Analysis in Global Market."

Ahmed N. and Kashem A., point out health, hygiene and sanitation of tea garden workers in the journal, titled "Health and Hygiene Practice of Tea Garden Workers in Bangladesh." Begum N. et al. drew attention to a dire situation of Bangladesh's tea industry and tea garden workers in their paper, titled "Current Scenario of Tea Garden Workers in Bangladesh: Time Demands to Stop the Zero-sum Game."

Islam M. N. and Al-Amin M. focused on, the causes of the Bangladeshi tea garden workers' poverty, their vulnerability, and their strategies for surviving in their paper, titled "Life behind leaves: capability, poverty and social vulnerability of tea garden workers in Bangladesh."

Rahman M. M. identified the disparity in wages and negligence of the tea garden worker group in the Sylhet district of Bangladesh in his paper, titled, "Wages Diversity and Negligence: A Comparative Study of Tea Garden Workers in Sylhet Region, Bangladesh"

Hossain R. highlighted the cause of tea garden workers' marginalization and actual livelihood difficulty in the context of Sylhet in his paper, "SOCIAL EXCLUSION OF TEA PLANTATION WORKERS IN BANGLADESH." Vijesandiran P. S. explained about Living Wages for Sri Lankan tea estate employees in his paper, titled "LIVING WAGE FOR THE TEA ESTATEWORKERS IN SRI LANKA."

Biswas A. et al. point out issues regarding maternity, neonatal, and healthcare in Bangladesh's tea garden community in their paper, titled "Exploring the perceptions, practices and challenges to maternal and newborn health care among the underprivileged teagarden community in Bangladesh: a qualitative study."

Jegathesan M. highlighted unsatisfactory facts tea garden workers in Sri Lanka in his paper, titled "Deficient realities: expertise and uncertainty among tea plantation workers in Sri Lanka." Uddin I. et al. focused on the tea garden laborers' terrible income in their paper, "INCOME VULNERABILITY OF TEA GARDEN WORKERS IN BANGLADESH."

Siegmann K. A. et al. drew attention to the two countries India and Sri Lanka are greatest number of tea workers and plantations with Fairtrade certification in their paper, "FAIRTRADE CERTIFIED TEA IN THE HIRED LABOUR SECTOR IN INDIA AND SRI LANKA: IMPACT STUDY AND BASELINE DATA COLLECTION"

Majumder S. C. and Roy S. C. point out the present socio-economic conditions faced by the tea industry workers of Bangladesh in their paper, titled "Socio-economic Conditions of Tea Plantation Workers in Bangladesh: A Case Study on Sreemangal." Zaman M. O. and Abir T. M. focused on the procedure of tea garden workers' social exclusion in their paper, "The Process of Social Exclusion of Tea Garden Workers: A Study on Sylhet City Corporation, Bangladesh."

Islam G. M. R. et al. highlighted the present condition and support required of tea industry in Bangladesh in their paper, titled "PRESENT STATUS AND FUTURE NEEDS OF TEA INDUSTRY IN BANGLADESH." Mondal S. C. explained about Bangladesh's current tea producing situation, the socioeconomic circumstances of the employees, and practical problems related to tea production in his paper, titled "Tea Production, Processing, and Socio economic Status in Bangladesh."

Sumi R. S. highlighted the quantity of tea that will eventually be needed for domestic production in her paper, titled "Demand Analysis of Domestic Tea Market in Bangladesh: An Empirical Investigation." Begum S. and Islam D. Q. F. point out the condition of education of tea garden workers children in their paper, titled "Education of Children of Tea Garden Workers: Organizations, Provisions and Challenges"

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C. BACKGROUND OF THE STUDY

The purpose of the researchers for writing this research paper is to make the citizens of the state aware of different laws and legal provisions regarding Wages Divergence and Malfeasance with Tea Garden Workers in the context of Bangladesh and to suggest to the policymakers the best way to eradicate this problem gradually. Different types of research articles have already been published on this particular topic but this article focuses on the concurrent situation of Wages Divergence and Malfeasance with Tea Garden Workers in Bangladesh and its laws. Wages Divergence and Malfeasance is becoming a national malaise which is increasing at an alarming rate. There are many risk factors arising from Wages Divergence and Malfeasance such as decreasing the production and tea plantation rate in the national context, which may diminish the export of tea over different countries of the world and national economy might have the impact of this situation at a large scale. Risk factors are deeply rooted by having injustices and inequalities, and not having the facilities that the other tea workers are having across the globe. Risk factors have transcended boundaries and occur in individual, social, and economic contexts.

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D. RESEARCH METHODOLOGY

To investigate the issues of wages divergence and malfeasance in the tea industry in Bangladesh, a mixed-method research approach has been employed. Research question for the research has been clearly identified in this paper by the concerned researchers. The methodology of the research is followed by the quantitative method of research and all the relevant data and

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information of this research paper shall be considered as the Secondary data. The researchers have tried to find out the problem and suggested some recommendations to eradicate the prime at some level.

E. STATEMENT OF THE PROBLEM

Despite the importance of the tea garden sector for the economy of Bangladesh, there exists a significant wage disparity among tea garden workers, with women workers receiving lower wages compared to their male counterparts. Moreover, malfeasance such as bribery, illegal wage deductions, and the use of child labor are prevalent in the sector (UNB, 2022). These issues have significant implications for the welfare of tea garden workers and the sustainability of the sector. Therefore, there is a need to conduct a comparative analysis of the wage divergence and malfeasance issues in the tea garden sector in Bangladesh and provide policy suggestions to address these issues (UN News Global perspective Human stories, 2021). Regardless of the existence of labor laws and regulations to protect the rights of tea garden workers, enforcement of these laws is often weak, which has contributed to the prevalence of malfeasance in the sector (Zaman & Abir, 2017). The living conditions of tea garden workers, including access to healthcare, education, and housing, are often substandard, which has significant implications for their health and wellbeing (Hossain, 2021). The impact of climate change on the tea garden sector in Bangladesh is a growing concern, as extreme weather events such as floods and droughts have the potential to significantly disrupt tea production and affect the livelihoods of tea garden workers (Pantha & Rezwan, 2022).

Low wages also contributes to a lack of incentives for workers to remain in the tea sector, resulting in high turnover rates and a labor shortage (Khisa & Iqbal, 2001). Tea is a low-margin sector, and there is little room for enterprises to boost wages without increasing tea prices, which can be challenged in a highly competitive market (Correspondent, 2022). However, tea business is a well growing sector for the economy of Bangladesh and for that reason lower wages for tea workers might result in a variety of issues and complications (THE HINDU, 2022), including:

- a. **Poverty and financial insecurity:** Frequently, low earnings cause workers and their households to live in poverty and find it difficult to survive.
- b. **Inadequate nutrition and housing:** Workers may be unable to afford adequate nutrition and housing, resulting in substandard health and living conditions.
- c. **Lack of knowledge and access to healthcare:** Low pay might make it impossible for employees to afford basic medical treatment, resulting in untreated diseases and injuries.
- d. **Problems enrolling children in school:** The inability of workers to pay for their children's education may result in intergenerational poverty.
- e. **High turnover rates:** Low wages can cause workers to leave the tea industry in pursuit of better-paying jobs, resulting in a skilled labor shortage.
- f. **Lack of improvement incentives:** As there is little financial incentive to do so, low wages can make it more difficult for employees to see the benefit in enhancing their skills or working hard.

There is a need for a gender-sensitive approach to address the wage disparity among tea garden workers, as women workers often face discrimination and are paid lower wages than their male counterparts (Mondal et al., 2021).

F. THE PRESENT SCENARIO OF TEA GARDEN WORKERS' EXPLOITATION IN BANGLADESH:

Bangladesh is one of the largest tea producing countries in the world, and the tea industry plays a significant role in the country's economy (Sumi, 2019). However, tea workers in Bangladesh face various challenges and issues. One of the primary challenges is low wages (Alam & Akter, n.d.). Tea workers in Bangladesh earn some of the lowest wages in the world, with many earning less than the minimum wage (Philip, 2022). This low wage makes it challenging for workers to meet their basic needs, such as food, housing, and healthcare (The Financial Express, 2022).

Another challenge faced by tea workers is poor working conditions. Many tea workers work long hours in the fields, often without proper safety equipment, which can lead to health problems such as respiratory diseases and skin infections (Business & Human Rights Resource Centre, 2022). In addition, many workers are not provided with basic facilities such as clean drinking water and sanitation (Ahmed & Kashem, 2019). There have been some efforts to improve the situation for tea workers in Bangladesh, including efforts to increase wages and improve working conditions (Barkat et al., 2010). However, progress has been slow, and many workers still face significant challenges (Masum, 2022).

According to the Bangladesh Tea Board, there are around 4,000 tea gardens in the country, which employ around 4, 50, 000 workers. Around 55% of these workers are women, and many are from the indigenous communities who are historically

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marginalized (Chandan & Deshwara, 2022). The majority of tea workers in Bangladesh work in the Sylhet, Chittagong, and Moulvibazar regions, which are known for their tea plantations (Society for Environment and Human Development, 2009). These workers typically work long hours, often in difficult conditions, and earn low wages (Star, 2022). In addition to the plantation workers, there are also many small-scale tea growers in Bangladesh, who typically own small plots of land and sell their tea to larger companies (Philip, 2023). It is estimated that there are around 130,000 small-scale tea growers in the country, many of whom face similar challenges to the plantation workers in terms of low wages and poor working conditions (Parvin, n.d.).

Research has shown that the lack of basic data on women and children working in tea gardens is holding back progress in the Sylhet division relative to other regions of the nation (Rahman, 2020). In the UN Women Bangladesh webinar (Partha, 2019), a study indicated that intensifying social security for female tea garden workers and their families in Sylhet Division, Bangladesh, Two workshops and surveys were organized by the ILO, UNFPA, and UNICEF, who were working together on this issue. Gender-responsive planning and budgeting (GRPB) and social protection of tea garden workers were two of the webinar's main topics of discussion (International Labor Organization, 2019).

Female tea garden employees encounter hygienic issues when they are in menstruation, pregnant, or raising children (Islam et al., 2005). Additionally, the program found that they had to work longer than eight hours a day in bad weather with little access to restrooms and other facilities. Tea garden employees were often experienced domestic violence, child marriage and dowries (Philip, 2020). The head of the Bangladesh Tea Association's Labor Health and Welfare subcommittee, Tahsin Ahmed Chowdhury, claimed that the BBS-UNICEF data has significant errors (UN Sustainable Development Group, 2021).

According to the Bangladesh Tea Board's annual report, In 159 tea garden areas around the country as of 2017, 4, 40, 743 workers and their families lived while only 25% were permanent employees and the rest were temporary or seasonal employees (SYFUL, 2022). Every industry has made significant progress, but tea plantation workers have fallen far behind (Huq, 2013). For many years, the sector was ignored due to different reasons. It is crucial time to provide healthy living conditions to the tea workers in Bangladesh in order to ensure the SDGs (Majumder & Roy, 2011). The most underdeveloped communities in Bangladesh are those who work in the tea industry and therefore, it is crucial to have an active union that will uphold their rights and work tirelessly on their behalf (Opu, 2021).

G. LAWS RELATED TO TEA WORKERS:

In Bangladesh, the rights of tea workers are protected by various laws and regulations. Some of the key laws that apply to tea workers in the country are as follows:

- a. **Labor Act, 2006:** This is the main law governing labor relations in Bangladesh. It provides for the rights of workers to form and join unions, bargain collectively, and strike. It also sets out the minimum wage, working hours, and other working conditions for workers in various industries, including the tea industry.
- b. **Tea Plantation Labor Ordinance, 1962:** This is a specific law that governs labor relations in the tea industry. It provides for the welfare of workers, including provisions for housing, medical facilities, and education for workers and their families. It also sets out the minimum wage and working hours for tea workers.
- c. **Bangladesh Labor Rules, 2015:** These rules were promulgated under the Labor Act, 2006, and provide detailed guidance on the implementation of labor laws in Bangladesh. They set out specific provisions for various aspects of labor relations, including employment contracts, termination of employment, and working conditions.
- d. **National Tripartite Plan of Action for the Ready-Made Garment Sector, 2013:** This is a voluntary agreement between the government of Bangladesh, employers, and workers' organizations, aimed at improving working conditions and ensuring workers' rights in the ready-made garment sector. Although the agreement does not specifically apply to the tea industry, it has set a precedent for collective action to improve working conditions in other sectors as well.
- e. **Child Labor (Prohibition and Regulation) Act, 2006:** This law prohibits the employment of children under the age of 14 in any occupation, including the tea industry. It also provides for penalties for employers who violate the law.
- f. **Maternity Benefits Act, 1939:** This law provides for maternity benefits for women workers, including tea workers. It requires employers to provide paid leave for pregnant workers and to provide medical facilities for them and their children.
- g. **National Social Security Strategy, 2015:** This is a policy framework that aims to provide social protection to all citizens of Bangladesh, including tea workers. It includes provisions for cash transfers, health insurance, and other social security measures.
- h. **Export Processing Zones (EPZs) Labor Act, 2019:** This law provides for the rights of workers in export processing zones, which include some tea processing facilities. It sets out the minimum wage, working hours, and other working conditions for workers in EPZs, and provides for the establishment of grievance redress mechanisms (Correspondent, 2022).

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i. **The Industrial Relations Act, 2018**, provides for the rights of workers and employers to form and join trade unions, and to engage in collective bargaining. The law also sets out the procedures for the settlement of industrial disputes, including through negotiation, conciliation, and arbitration. The law applies to all industries in Bangladesh, including the tea industry, and is aimed at promoting industrial peace and harmony by ensuring the rights of workers and employers are protected. The law also establishes a new Industrial Relations Council to oversee the implementation of the law and to facilitate the resolution of industrial disputes (Deshwara, 2022).

In addition to these laws and regulations, there are also several organizations and initiatives that work to promote the rights of tea workers in Bangladesh, including trade unions, civil society organizations, and international organizations like the International Labor Organization (ILO).

H. COMPARATIVE ANALYSIS

I. India

In India, the wages of tea workers are regulated by various labor laws and government policies. However, there has been a long-standing issue of wage divergence among tea workers, with some workers earning significantly less than others. This issue has been highlighted by various organizations and activists, who have called for better wages and working conditions for tea workers. One of the primary laws that regulate wages for tea workers in India is the Plantation Labour Act, 1951. This act applies to all plantations, including tea plantations, and lays down various provisions related to working conditions, wages, and benefits for workers. Under the act, tea workers are entitled to minimum wages, which are revised periodically by the government. However, there have been instances where tea workers have not been paid the minimum wages prescribed by the government (Rowlatt, 2016). This has led to protests and strikes by workers, demanding better wages and working conditions. In some cases, workers have also sought legal recourse to challenge the non-payment of minimum wages. Another issue that contributes to wage divergence among tea workers in India is the system of contract labor. Many tea plantations hire workers on a contractual basis, which often results in lower wages and fewer benefits compared to permanent workers. Contract workers also have less job security and are vulnerable to exploitation by employers. To address these issues, the government has introduced various policies and initiatives aimed at improving the wages and working conditions of tea workers. For example, the Tea Board of India has launched a welfare scheme for tea workers, which includes provisions for housing, healthcare, and education. The government has also set up committees to review the wages and working conditions of tea workers and make recommendations for improvement. In summary, while there are various labor laws and policies in place to regulate wages for tea workers in India, there is still a significant gap in wages among workers. This issue needs to be addressed through a combination of legal reforms, policy initiatives, and better enforcement of existing laws (Rajbangshi & Nambiar, 2020).

It is noteworthy to mention that India have executed the Minimum Wages Act of 1948, the Payment of Wages Act of 1936, the Plantations Labour Act of 1951, the Industrial Disputes Act of 1947, the Employees' State Insurance Act of 1948, , among others, govern the rights and working conditions of tea workers and to protect their rights. These statutes establish basic requirements for things like wages, health and safety on the job, benefits, and protections against discrimination in the workplace (Sarmah & Barooah, 2022). The Minimum Wages Act, 1948, is a process of the Indian Parliament that regulates minimum wage rates for a wide range of industries, including tea plantations. The act mandates the establishment of minimum wage rates for certain forms of employment and the enforcement of their payment. The Minimum Wage Act establishes minimum wages that employers are required to pay to employees, regardless of the worker's level of education or experience. The Act also stipulates that authorities will be responsible for ensuring that minimum wages are provided and adhered to. As a result of this law, the appropriate government now has the authority to establish and adjust minimum wages for various categories of workers and for various geographic regions.

II. Pakistan:

In Pakistan, the wages of tea workers are regulated by various labor laws and government policies. However, there has been a long-standing issue of wage divergence among tea workers, with some workers earning significantly less than others. This issue has been highlighted by various organizations and activists, who have called for better wages and working conditions for tea workers. One of the primary laws that regulate wages for tea workers in Pakistan is the Minimum Wages for Unskilled Workers Ordinance, 1969. This ordinance applies to all industries, including the tea industry, and sets minimum wages for unskilled workers. The minimum wage rate is revised periodically by the government. However, there have been instances where tea workers have not been paid the minimum wages prescribed by the government. This has led to protests and strikes by workers, demanding better wages and working conditions. In some cases, workers have also sought legal recourse to challenge the non-payment of

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minimum wages. Another issue that contributes to wage divergence among tea workers in Pakistan is the system of contract labor. Many tea estates hire workers on a contractual basis, which often results in lower wages and fewer benefits compared to permanent workers. Contract workers also have less job security and are vulnerable to exploitation by employers. To address these issues, the government has introduced various policies and initiatives aimed at improving the wages and working conditions of tea workers. For example, the government has launched a program called "Prime Minister's Kamyab Jawan Programme" which aims to provide financial assistance to youth for entrepreneurship, skill development, and job creation. Additionally, the government has also set up committees to review the wages and working conditions of tea workers and make recommendations for improvement. In summary, while there are various labor laws and policies in place to regulate wages for tea workers in Pakistan, there is still a significant gap in wages among workers. This issue needs to be addressed through a combination of legal reforms, policy initiatives, and better enforcement of existing laws.

Notably, the Pakistani government has also enacted provisions for the tea workers in labor laws and regulations to safeguard their rights. The rights of tea workers on plantations in Pakistan are protected by labor laws and regulations. A list of key acts and laws related to tea workers in Pakistan are as follows:

- a. **The Industrial and Commercial Employment (Standing Orders) Ordinance, 1968:** This ordinance regulates the terms and conditions of employment in industrial and commercial establishments, including tea plantations.
- b. **The West Pakistan Shops and Establishment Ordinance, 1969:** This ordinance regulates the working conditions in shops and establishments, including tea plantations.
- c. **The Employment of Children Act, 1991:** This act prohibits the employment of children in hazardous occupations and sets minimum age requirements for employment in non-hazardous occupations.
- d. **The Bonded Labor System (Abolition) Act, 1992:** This act prohibits the practice of bonded labor and provides for the rehabilitation of bonded laborers.
- e. **The Minimum Wages for Unskilled Workers Act, 1966:** This act sets minimum wage rates for unskilled workers, including tea workers.
- f. **The Employees' Old-Age Benefits Act, 1976:** This act provides for the payment of old-age benefits to employees in industries, including tea plantations.
- g. **The Employees' Social Security Ordinance, 1965:** This ordinance provides for the establishment of social security schemes for employees in industries, including tea plantations.

These laws are intended to ensure that tea workers in Pakistan are treated fairly and have access to basic rights and benefits.

III. SRI LANKA

In Sri Lanka, the wages of tea workers are regulated by various labor laws and government policies. However, there has been a long-standing issue of wage divergence among tea workers, with some workers earning significantly less than others (Business & Human Rights Resource Centre, 2019). This issue has been highlighted by various organizations and activists, who have called for better wages and working conditions for tea workers. One of the primary laws that regulate wages for tea workers in Sri Lanka is the Wages Boards Ordinance, 1941. This ordinance provides for the establishment of wages boards to regulate the wages and other conditions of employment of workers in various industries, including the tea industry. The wages boards determine minimum wages for different categories of workers in the industry, and the minimum wage rate is revised periodically by the government (Peoples, 2020). However, there have been instances where tea workers have not been paid the minimum wages prescribed by the government (Siegmann et al., 2019). This has led to protests and strikes by workers, demanding better wages and working conditions. In some cases, workers have also sought legal recourse to challenge the non-payment of minimum wages. Another issue that contributes to wage divergence among tea workers in Sri Lanka is the system of contract labor (Vijesandiran, 2022). Many tea estates hire workers on a contractual basis, which often results in lower wages and fewer benefits compared to permanent workers. Contract workers also have less job security and are vulnerable to exploitation by employers (CEIC, 2018). To address these issues, the government has introduced various policies and initiatives aimed at improving the wages and working conditions of tea workers. For example, the government has launched a program called "Plantation Social Welfare Fund" which provides financial assistance for housing, education, and healthcare to the estate community, including tea workers (The Borgen Project, 2021). Additionally, the government has also set up committees to review the wages and working conditions of tea workers and make recommendations for improvement (Jegathesan, 2015). In summary, while there are various labor laws and policies in place to regulate wages for tea workers in Sri Lanka, there is still a significant gap in wages among workers. This issue needs to be addressed through a combination of legal reforms, policy initiatives, and better enforcement of existing laws.

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The situation of tea workers varies from country to country, depending on factors such as labor laws, working conditions, and the level of development of the tea industry. Overall, while the situation of tea workers varies from country to country, there are often common challenges such as low wages, poor working conditions, and exposure to pesticides and other chemicals. Efforts are being made to improve the situation for tea workers globally, including through fair trade certification programs and other initiatives to promote ethical and sustainable sourcing practices.

I. RECOMMENDATIONS

To address the issue of wage disparity and exploitation among Bangladesh's tea garden laborers, the following suggestions may be considered:

- a. **Improve transparency and accountability:** One of the root causes of wage divergence and malfeasance is the lack of transparency and accountability in the tea industry. There is a need to ensure that all tea garden workers receive fair and transparent wages, and that their working conditions are safe and healthy. This can be achieved through a range of measures, such as publishing wages, implementing independent audits, and improving access to information (Kamruzzaman et al., 2015).
- b. **Enforce labor laws:** The government should strictly enforce labor laws to prevent malfeasance and ensure that workers' rights are protected (BBC News, 2002). This includes cracking down on employers who violate labor laws, such as by paying below the minimum wage, withholding overtime pay, or denying workers their entitlements (Uddin et al., 2020).
- c. **Strengthen labor unions:** Labor unions play an important role in representing workers and advocating for their rights. The government should ensure that labor unions are allowed to operate freely and are not subject to harassment or intimidation. Employers should also be required to recognize and negotiate with labor unions representing their workers (Begum et al., 2022).
- d. **Improve working conditions:** Employers should be required to provide safe and healthy working conditions for their workers. This includes providing adequate protective gear, ensuring safe working practices, and providing access to medical care when needed.
- e. **Provide training and education:** Employers should provide training and education to workers to help them acquire the skills and knowledge needed to perform their jobs effectively. This includes training on safe working practices, financial literacy, and basic literacy and numeracy skills.
- f. **Promote responsible business practices:** Employers should be encouraged to adopt responsible business practices, such as fair labor practices, ethical sourcing, and environmental sustainability. This can be encouraged through certification programs, government incentives, and public awareness campaigns.
- g. **Collaborate with international organizations:** The Bangladeshi government should collaborate with international organizations, such as the International Labour Organization, to promote better working conditions and labor practices in the tea industry. This can include sharing best practices, providing technical assistance, and advocating for workers' rights at the international level (Islam & Al-Amin, 2019).
- h. **Conduct regular wage surveys:** The government should conduct regular surveys to assess the wages of tea garden workers and ensure that they are being paid a fair wage. This can help to identify any wage divergence and ensure that workers are being paid in line with their skills and experience.
- i. **Provide social protections:** Tea garden workers often lack access to social protections such as health care, insurance, and pension benefits. The government should work to expand social protections to cover all workers in the tea industry, including those who are employed informally.
- j. **Improve access to credit:** Tea garden workers often face financial challenges, including lack of access to credit. The government should work with financial institutions to provide access to affordable credit for workers, which can help them to start small businesses or make other investments.
- k. **Address gender inequality:** Women are often disproportionately affected by wage divergence and malfeasance in the tea industry. The government should work to address gender inequality in the industry by promoting equal pay for equal work, increasing access to education and training for women, and empowering women to participate in decision-making processes.
- l. **Address child labor:** Child labor is a serious problem in the tea industry, with many children working in hazardous conditions. The government should work to eliminate child labor in the industry by enforcing labor laws, providing education and training to children, and promoting alternative livelihoods for families.
- m. **Promote sustainable development:** The tea industry is often associated with environmental degradation and unsustainable practices. The government should work to promote sustainable development in the industry by encouraging sustainable agricultural practices, promoting renewable energy, and protecting natural resources.

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n. **Increase consumer awareness:** Consumers have an important role to play in promoting better working conditions and labor practices in the tea industry. The government should work to increase consumer awareness of the issues facing tea garden workers and promote ethical and sustainable consumption. This can include labeling schemes, public awareness campaigns, and certification programs.

Moreover Workers in cooperatives have a vested interest in the success of their firms, which can lead to increased salaries if the government encourages the formation and expansion of such organizations. In sum, a range of governmental responses can help push tea workers out of poverty by increasing their earnings and other benefits (Nousheen, 2022).

J. SCOPES OF FURTHER RESEARCH

There is still a significant scope for research in the area of wages divergence and malfeasance with tea garden workers in Bangladesh. Some potential areas for future research include:

- a. **Wage-setting mechanisms:** Further research is needed to understand the wage-setting mechanisms in the tea industry and the factors that contribute to wage divergence. This can help to identify potential solutions to ensure that workers are paid a fair wage.
- b. **Labor market dynamics:** There is a need for more research on the labor market dynamics in the tea industry, including the factors that influence labor supply and demand and the impact of labor market policies and regulations on workers.
- c. **Gender and social inequality:** Further research is needed to understand the gender and social inequalities in the tea industry, including the ways in which these inequalities affect wages, working conditions, and opportunities for advancement.
- d. **Worker well-being:** Research is needed to understand the impact of working conditions on worker well-being, including physical and mental health outcomes. This can help to identify potential interventions to improve worker well-being.
- e. **Environmental sustainability:** There is a need for more research on the environmental sustainability of the tea industry, including the impact of agricultural practices on natural resources and the potential for sustainable development in the industry.
- f. **Consumer behavior:** Research is needed to understand consumer behavior and preferences related to tea consumption, including their willingness to pay for ethical and sustainable tea products. This can help to inform the development of certification schemes and other initiatives aimed at promoting ethical and sustainable tea production.
- g. **Policy interventions:** Further research is needed to evaluate the effectiveness of policy interventions aimed at improving wages, working conditions, and labor practices in the tea industry. This can help to identify best practices and inform future policy decisions.

K. CONCLUDING REMARKS

In conclusion, the issues of wages divergence and malfeasance with tea garden workers in Bangladesh are significant and require comprehensive and sustained efforts by multiple stakeholders to address them. The recommendations to improve transparency and accountability, enhance social protection, strengthen collective bargaining, promote responsible investment, and encourage stakeholder engagement are key to achieving a more equitable and sustainable tea industry in Bangladesh. It is essential to prioritize the needs and rights of tea garden workers in this process and to work towards building a more just and fair industry for all stakeholders involved. By implementing these recommendations, we can make progress towards ensuring that tea garden workers in Bangladesh are able to receive fair and transparent wages, work in safe and healthy conditions, and enjoy the benefits of social protection, collective bargaining, responsible investment, and stakeholder engagement.

REFERENCES

- 1) Bangladesh Tea Board. (2015). *TEA JOURNAL OF BANGLADESH*. বাংলাদেশ চা বোর্ড-গণপ্রজাতন্ত্রী বাংলাদেশ সরকার. https://teaboard.portal.gov.bd/sites/default/files/files/teaboard.portal.gov.bd/publications/bf134ff6_a2c1_40ea_9701_3e43de69ec1a/BTRI_Journal_Vol._44_2015.pdf
- 2) Aljazeera. (2022, August 21). *Why are Bangladesh tea garden workers protesting?* Breaking News, World News and Video from Al Jazeera. <https://www.aljazeera.com/news/2022/8/21/why-are-bangladesh-tea-workers-protesting>
- 3) Begum, N., Hashmi, N., & Ali, M. M. (2022, December). *Current Scenario of Tea Garden Workers in Bangladesh: Time Demands to Stop the Zero-sum Game*. ResearchGate | Find and share research. https://www.researchgate.net/publication/366514534_Current_Scenario_of_Tea_Garden_Workers_in_Bangladesh_Time_Demands_to_Stop_the_Zero-sum_Game

Wages Divergence and Malfeasance with Tea Garden Workers in Bangladesh: A Comparative Analysis with Suggestion for the Policymakers

- 4) UN News Global perspective Human stories. (2021, March 23). *Exploited and marginalized, Bangladeshi tea workers speak up for their rights*. UN News. <https://news.un.org/en/story/2021/03/1087622>
- 5) Pantha, R. R., & Rezwana. (2022, September 5). *How can tea workers in Bangladesh survive on a daily wage of less than 2 USD?* Global Voices. <https://globalvoices.org/2022/09/05/how-can-tea-workers-in-bangladesh-survive-on-a-daily-wage-of-less-than-2-usd/>
- 6) THE HINDU. (2022, August 13). *Bangladeshi tea workers strike against low wages*. The Hindu: Breaking News, India News, Sports News and Live Updates. <https://www.thehindu.com/news/international/bangladeshi-tea-workers-strike-against-low-wages/article65765582.ece>
- 7) Philip, G. (2022, August 22). *Fairer wages, or more broken promises for tea workers?* The Daily Star. <https://www.thedailystar.net/opinion/views/news/fairer-wages-or-more-broken-promises-tea-workers-3100786>
- 8) The Financial Express. (2022, August 28). *Tea estates in Sylhet come alive as workers return after a wage hike*. <https://thefinancialexpress.com.bd/national/tea-estates-in-sylhet-come-alive-as-workers-return-after-a-wage-hike-1661677894>
- 9) Business & Human Rights Resource Centre. (2022, August 16). *Bangladesh: Nearly 150,000 workers at 200+ tea plantations strike for pay rise*. <https://www.business-humanrights.org/en/latest-news/bangladesh-nearly-150000-workers-at-200-bangladeshi-tea-plantations-strike-for-pay-rise/>
- 10) Ahmed, N., & Kashem, A. (2019). *Health and Hygiene Practice of Tea Garden Workers in Bangladesh*. Global Journals Incorporated USA Research Publishing. https://globaljournals.org/GJHSS_Volume19/4-Health-and-Hygiene-Practice-of-Tea.pdf
- 11) Masum, B. (2022, August 23). *Shocked by tea workers' wages? Everyone else is not doing any better*. The Business Standard. <https://www.tbsnews.net/features/panorama/shocked-tea-workers-wages-everyone-else-not-doing-any-better-482190>
- 12) International Labour Organization. (2019, December 20). *Tea workers are underpaid, deprived and discriminated: Labour law should be amended*. https://www.ilo.org/dhaka/Informationresources/Publicinformation/features/WCMS_749580/lang--en/index.htm
- 13) Siegmann, K. M., Ananthakrishnan, S., Fernando, K., & Joseph, K. J. (2019, December). *Fairtrade certified Tea in the Hired Labour Sector in India and Sri Lanka: Impact Study and Baseline Data Collection*. ResearchGate | Find and share research. https://www.researchgate.net/publication/346489083_Fairtrade_certified_Tea_in_the_Hired_Labour_Sector_in_India_and_Sri_Lanka_Impact_Study_and_Baseline_Data_Collection
- 14) Peoples, D. (2020, October 3). *Sri Lankan tea estate workers agitate for better pay*. NewsClick. <https://www.newsclick.in/Sri-Lankan-Tea-Estate-Workers-Agitate-Better-Pay>
- 15) Business & Human Rights Resource Centre. (2019, February 10). *Sri Lanka: Tea workers demand increased minimum daily wage*. <https://www.business-humanrights.org/en/latest-news/sri-lanka-tea-workers-demand-increased-minimum-daily-wage/>
- 16) Society for Environment and Human Development. (2009, August). *The story of tea workers in Bangladesh*. SEHD – Society for Environment and Human Development. <https://sehd.org/the-story-of-tea-workers-in-bangladesh/>
- 17) Star, R. (2022, August 28). *Tea workers' wages: PM sets it at Tk 170 a day*. The Daily Star. <https://www.thedailystar.net/news/bangladesh/news/tea-workers-wages-pm-sets-it-tk-170-day-3104596>
- 18) Philip, G. (2023, January 29). *No justice in paying tea workers' arrears*. The Daily Star. <https://www.thedailystar.net/opinion/views/news/no-justice-paying-tea-workers-arrears-3232926>
- 19) UN Sustainable Development Group. (2021, April 22). *UNSDG | Social protection for female tea garden workers and their families in the Sylhet Division*. United Nations Sustainable Development Group. <https://unsdg.un.org/latest/stories/social-protection-female-tea-garden-workers-and-their-families-sylhet-division>
- 20) SYFUL, I. (2022, August 22). *Bangladesh tea strike spotlights poorest workers' inflation plight*. Nikkei Asia. <https://asia.nikkei.com/Economy/Inflation/Bangladesh-tea-strike-spotlights-poorest-workers-inflation-plight>
- 21) Philip, G. (2020, September 9). *Time to pay just wages to tea workers*. The Daily Star. <https://www.thedailystar.net/opinion/news/time-pay-just-wages-tea-workers-1958161>
- 22) Majumder, S. C., & Roy, S. C. (2011, October). *Socio-economic Conditions of Tea Plantation Workers in Bangladesh: A Case Study on Sreemongal*. ResearchGate | Find and share research. https://www.researchgate.net/publication/274180936_Socio-economic_Conditions_of_Tea_Plantation_Workers_in_Bangladesh_A_Case_Study_on_Sreemongal
- 23) Opu, M. H. (2021, August 25). *Survey: 74% tea garden workers still living in poverty*. Dhaka Tribune.

Wages Divergence and Malfeasance with Tea Garden Workers in Bangladesh: A Comparative Analysis with Suggestion for the Policymakers

- <https://archive.dhakatribune.com/bangladesh/2021/08/25/survey-74-tea-garden-workers-still-living-in-poverty>
- 24) Zaman, M. O., & Abir, T. M. (2017, January). *The Process of Social Exclusion of Tea Garden Workers: A Study on Sylhet City Corporation, Bangladesh*. ResearchGate | Find and share research.
https://www.researchgate.net/publication/333339203_The_Process_of_Social_Exclusion_of_Tea_Garden_Workers_A_Study_on_Sylhet_City_Corporation_Bangladesh
- 25) Hossain, R. (2021, October). *Social exclusion of tea plantation workers in Bangladesh*. ResearchGate | Find and share research.
https://www.researchgate.net/publication/361456814_Social_exclusion_of_tea_plantation_workers_in_Bangladesh
- 26) Huq, C. (2013, November 8). *Mobilizing for tea garden workers in South Asia*. Law at the Margins.
<https://lawatthemargins.com/mobilizing-for-tea-garden-workers-in-south-asia/>
- 27) Deshwara, M. (2022, August 26). *Tea workers' strike: Owners of tea estates to meet PM tomorrow*. The Daily Star.
<https://www.thedailystar.net/news/bangladesh/news/tea-workers-strike-no-headway-ending-deadlock-yet-3103286>
- 28) Correspondent, S. (2022, March 29). *'Social protection, education of women and children in tea gardens should be emphasised'*. Prothomalo. <https://en.prothomalo.com/bangladesh/social-protection-education-of-women-and-children-in-tea-gardens-should-be-emphasised>
- 29) Khisa, P., & Iqbal, M. (2001, December). *TEA MANUFACTURING IN BANGLADESH: PROBLEMS AND PROSPECTS*. Welcome to Department of Mechanical Engineering, BUET | Welcome.
[https://me.buet.ac.bd/icme/icme2001/cdfiles/Papers/Manufacturing/15_MP-26_final\(85-91\).pdf](https://me.buet.ac.bd/icme/icme2001/cdfiles/Papers/Manufacturing/15_MP-26_final(85-91).pdf)
- 30) Correspondent, S. (2022, August 28). *Tea estates in Sylhet come alive as workers return after a wage hike*. bdnews24.com.
<https://bdnews24.com/bangladesh/hicthg4g5o>
- 31) Barkat, A., Mahiyuddin, G., Shaheen, N., Poddar, A., Osman, A., Rahman, M., & A, R. (2010, September). *Assessment of the Situation of Children and Women in the Tea Gardens of Bangladesh*. HDRC – Human Development Research Centre.
<https://www.hdrc-bd.com/wp-content/uploads/2018/12/20.-Assessment-of-the-situation-of-children-and-women-in-the-tea-gardens-of-Bangladesh.pdf>
- 32) Islam, G. M., Iqbal, M., Quddus, K. G., & Ali, M. Y. (2005, January). *PRESENT STATUS AND FUTURE NEEDS OF TEA INDUSTRY IN BANGLADESH*. ResearchGate | Find and share research.
https://www.researchgate.net/publication/237278073_PRESENT_STATUS_AND_FUTURE_NEEDS_OF_TEA_INDUSTRY_IN_BANGLADESH
- 33) Alam, M., & Akter, S. (n.d.). *Tea Production and Trade Advances in Bangladesh: A Comparative Analysis in Global Market*. IOSR Journal. <https://www.iosrjournals.org/iosr-jbm/papers/Vol17-issue6/Version-3/B017631020.pdf>
- 34) BBC News. (2002, January 29). *BBC news | Business | Bangladesh tea exports fall*.
<https://news.bbc.co.uk/2/hi/business/1788816.stm>
- 35) Tribune, D. (2022, August 18). *BTA claims tea workers get Tk400 daily wages, other benefits*. Dhaka Tribune - Current & Breaking News Bangladesh & World. <https://www.dhakatribune.com/business/2022/08/18/bta-claims-tea-workers-get-tk400-daily-wages-other-benefits>
- 36) UNB. (2022, August 25). *Tea workers continue strike for tk300-a-day wages*. Dhaka Tribune - Current & Breaking News Bangladesh & World. <https://www.dhakatribune.com/bangladesh/2022/08/25/tea-workers-continue-strike-for-tk-300-a-day-wages>
- 37) Mondal, S. C., Hwang, H., & Eun, J. (2021, March). *Tea Production, Processing, and Socio-economic Status in Bangladesh*. ResearchGate | Find and share research.
https://www.researchgate.net/publication/351550448_Tea_Production_Processing_and_Socio-economic_Status_in_Bangladesh
- 38) Sumi, R. S. (2019, May). *Demand Analysis of Domestic Tea Market in Bangladesh: An Empirical Investigation*. Repository Home.
<https://repository.library.du.ac.bd:8080/bitstream/handle/123456789/1601/Razia%20Sultana%20Sumi.pdf?sequence=1&isAllowed=y>
- 39) Partha, K. (2019, February 23). *Story of tea garden workers*. The Asian Age.
<https://dailyasianage.com/news/164852/story-of-tea-garden-workers>
- 40) Parvin, D. R. (n.d.). *Health and Economic Conditions of Tea Garden Female Workers: A Study on Legal Rights*. Green University of Bangladesh. https://green.edu.bd/wp-content/uploads/2019/09/Health-and-Economic-Conditions-of-Tea-Garden-Female-Workers_A-Study-on-Legal-Rights.pdf
- 41) Rowlatt, J. (2016, November 12). *Indian tea workers' conditions remain very poor*. BBC News.
<https://www.bbc.com/news/world-asia-india-37936349>

Wages Divergence and Malfeasance with Tea Garden Workers in Bangladesh: A Comparative Analysis with Suggestion for the Policymakers

- 42) Chandan, M. S., & Deshwara, M. (2022, August 27). *Plight and struggle of tea workers continue forever*. The Daily Star. <https://www.thedailystar.net/weekend-read/news/tears-tea-gardens-3104101>
- 43) Rahman, M. M. (2020). *Wages Diversity and Negligence: A Comparative Study of Tea Garden Workers in Sylhet Region, Bangladesh*. Sryahwa Publications | Open Access Journals. <https://www.sryahwapublications.com/open-journal-of-economics-and-commerce/pdf/v3-i1/4.pdf>
- 44) Begum, N., Hashmi, N., & Ali, M. M. (2022, December). *View of current scenario of tea garden workers in Bangladesh: Time demands to stop the zero-sum game*. Global Mainstream Journal. <https://globalmainstreamjournal.com/index.php/BEDPM/article/view/36/26>
- 45) Sarmah, M., & Barooah, B. C. (2022, November 4). *View of reproductive rights of women in India with focus on tea plantation workers of Sonitpur district of Assam, India*. Thai Journals Online (ThaiJO). <https://so02.tci-thaijo.org/index.php/hasss/article/view/259257/174022>
- 46) Vijesandiran, P. S. (2022, September). *LIVING WAGE FOR THE TEA ESTATE WORKERS IN SRI LANKA*. <https://www.isdkandy.org/wp-content/uploads/2022/10/Rapid-estimation-LW-for-Plantion-workers-ISD-3rd-study-2022-1.pdf>
- 47) Islam, M. N., & Al-Amin, M. (2019, January 2). *Life behind leaves: Capability, poverty and social vulnerability of tea garden workers in Bangladesh*. Taylor & Francis. <https://www.tandfonline.com/doi/abs/10.1080/0023656X.2019.1623868?journalCode=clah20>
- 48) Rajbangshi, P. R., & Nambiar, D. (2020, February 28). *"Who will stand up for us?" the social determinants of health of women tea plantation workers in India*. BioMed Central. <https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-020-1147-3>
- 49) Jegathesan, M. (2015, April 23). *Deficient realities: Expertise and uncertainty among tea plantation workers in Sri Lanka*. SpringerLink. <https://link.springer.com/article/10.1007/s10624-015-9386-1>
- 50) Uddin, I., Haque, S., Huda, F. A., Zahir, A. A., & Sonia, J. F. (2020, January). *INCOME VULNERABILITY OF TEA GARDEN WORKERS IN BANGLADESH*. ResearchGate | Find and share research. https://www.researchgate.net/profile/Abdullah-Al-Zabir/publication/338700797_INCOME_VULNERABILITY_OF_TEA_GARDEN_WORKERS_IN_BANGLADESH/links/5e25e2f9299bf1031e27ae8d/INCOME-VULNERABILITY-OF-TEA-GARDEN-WORKERS-IN-BANGLADESH.pdf
- 51) Kamruzzaman, M., Parveen, S., & Das, A. C. (2015, January). *Livelihood Improvement of Tea Garden Workers: A Scenario of Marginalized Women Group in Bangladesh*. ResearchGate | Find and share research. https://www.researchgate.net/profile/Animesh-Das-8/publication/281507302_Livelihood_Improvement_of_Tea_Garden_Workers_A_Scenario_of_Marginalized_Women_Group_in_Bangladesh/links/596108ee0f7e9b81943f5598/Livelihood-Improvement-of-Tea-Garden-Workers-A-Scenario-of-Marginalized-Women-Group-in-Bangladesh.pdf
- 52) CEIC. (2018, December 5). *Sri Lanka average daily wage: Tea & rubber estate workers*. Global Economic Data, Indicators, Charts & Forecasts | CEIC. <https://www.ceicdata.com/en/sri-lanka/average-daily-wage/average-daily-wage-tea--rubber-estate-workers>
- 53) Nousheen, S. (2022, October 11). *Systematic Exploitation of the Tea Workers in Bangladesh: Within the Legal Framework and Beyond*. Dhaka Law Review. <https://www.dhakalawreview.org/blog/2022/10/systematic-exploitation-of-the-tea-workers-in-bangladesh-within-the-legal-framework-and-beyond-6124#:~:text=While%20employees%20in%20other%20businesses,of%20the%20Constitution%20of%20Bangladesh>
- 54) The Borgen Project. (2021, August 23). *The exploitation of tea plantation workers in Sri Lanka* -. <https://borgenproject.org/tea-plantation-workers-in-sri-lanka/>



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Electric Throwing Wheel from Repurposed Bucket, Ceiling Fan Motor, and Sewing Machine Regulator for Pottery Demonstration



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ABSTRACT: The cost of electric potters' throwing wheel keeps soaring high even when throwing yet a course that firmly exists and is valued in the ceramic production process besides other forming techniques in art/design schools. The challenge herewith is the need to look for cheaper alternative electric throwing wheels through local fabrication to alleviate the impending high cost of imported ones and the general scarcity of potter's wheels for demonstration in a simple ceramic studio setting by improvising available materials. The experimental-based methodology was deployed by sourcing and assembling the required components – an electric potter's wheel using a sewing machine regulator, iron bucket and basin, German plywood ½ inch, 1inch screw nails, bolts, and nuts, and 3 pin plug head. The principles of the 'development cycle' and the 'rotational kinetic energy (RKE)' were adopted. The results of the study revealed that: the electric has the capacity speed of 200rotation per minute (rpm) sufficient to center a-2kg of a well-prepared mass of leather hard clay - 50 rpm cylinders and bowls of various heights and widths up to 6" (height) and 5" (width) are viable; the repurposing of the conventional functions of the water bucket and fan the provision of air into an electric throwing wheel was successful. In conclusion, the study showed some success. The recommendations of the study include thus: further improvement as the focus of this one (project) is primarily to proffer a concept even though the topic is relevant to both product and service design; adoption of improvisation through repurposing for the mass construction of wheels as an alternative to the costly imported ones should be encouraged.

KEYWORDS: Repurposing, electric throwing wheel, electric fan motor, sewing machine regulator, pottery demonstration

INTRODUCTION

Ceramic wares forming methods include casting, jiggering and jollying, hand building, and throwing. The throwing is the process of forming a shape from a soft material such as clay using the wheel; a device known as a throwing wheel or a potters' wheel. John (1974) asserted that the definition of potter's wheels by scholars has been conventionally either placing greater emphasis on the device's design or the speed/length of rotation. However, the author said that the potter's wheel is a machine for molding clay into pottery by hand, consisting of a horizontal rotating disc that holds and turns the clay between the potter's hands. Berg (2020) conversely enumerated the enormous advantages of using the potter's wheel over other methods of pottery production as thus: production of even and symmetrical vessels; fast and maximized turn-over as a wheel can make production between twice and five times faster than a turntable or mold. Jonathan (2014) avowed the advantages of electric wheels compared to manual wheels viz: none demand any manual interference as the potter can concentrate completely on the work his hands are doing; lighter than kick wheels and some are portable to move from a location to another. And smaller in size to many be accommodated in a small space, throwing is faster, and are less noisy.

The concept of repurposing being key to study refers to a wide set of practices such as recycling or upcycling, all to make better use of or, give new life to physical materials and artifacts; with an obvious interest in sustainability issues (Simbelis, Ferreira, Vaara and Laaksolahti, 2016). Repurposing according to Aguirre (2010) is the transformation of products or their components to suit a second purpose after their first has expired, or creating a new or second life for an existent product by making some changes to it. The author further said it is a phenomenon that goes far back in history; the beginnings of object culture; at least as early as the Stone Age, people started using materials found in nature with the strategic goal of improving their chances of living.

Despite the importance of potter's wheels for simple classroom demonstrations, their costs are still high thus, the need for concepts such as improvisation. Daniel, Gadzama, Abubakar, and Mbdomti (2021) for instance suggest synergy and improvisation be among the design concepts to be encouraged for optimal design results. Improvisation according to Melanie and Satu (2018) has several temporal dimensions such as extemporization, meaning 'the time of inspiration'; a process of learning and inquiry, 'learning-in-organizing' that works by drawing on 'knowledge and personal experience, and the provision of alternatives to all

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things. While Hornby (2010) averred that improvisation means to make or do something by using whatever is available, usually due to what is in need; interestingly, Gerber (2007) held the same view of it as a creative act composed without prior thought completed through what Aguirre (2010) refers to as batch production and individual level through Do it Yourself (DIY).

Historical development of the potter's wheel

Historically, pot-making techniques in Mesopotamia gradually changed during the third millennium BC as more potters adopted the turntable for making and decorating (Jonathan, 2014). This is in line with Atkin (2013)'s claim of throwing been developed first in Egypt in 3000 BC.

Also, the development of the slow, or hand-turned wheel as an adjunct to pottery manufacture led to the introduction of the kick wheel rotated by foot by the 18th Century. However, by the 19th-century motive power found application in throwing wheels and, since the 19th century, the motive power has been mechanical. Berg (2020). The author conversely said that throwing wheels were invented in the 5th millennium BC in the Near East and spiraled transversely to the Mediterranean into southern and eastern Europe during the late Bronze and early Iron Ages before reaching Asia and, finally, the American continent.

The potter's wheel utilized new technological principles, namely, rotational kinetic energy (RKE) combined with manual force, to shape vessels (Berg, 2020). Initially, however, it seems that the wheel was only used to make small shapes or medium-sized and larger pots in stages and was not used for wheel-throwing but for hybrid techniques. Similarly, it is important to note that the potter wheels are powered either electrically or manually potter's wheels as being traditionally divided into two categories: simple and double (or kick) wheels and when utilized to its full potential, this invention can speed up production significantly.

Types of Wheels and How They Work: The Principle

Jonathan (2014) said two types of foot-powered wheels exist: kick wheels and treadle wheels. And that each of them: the kick wheel works by kicking the flywheel in a specific rhythm, which powers the wheel head, and uses a heavy flywheel that stores energy as it speeds up when propelled by your foot. The treadle wheel uses a lever with a mechanism that turns a shaft with a weighted flywheel. The main components of most kick wheels include a steel frame, an adjustable seat, reinforced cast concrete flywheel, cast metal wheel head, and wood metal or composite work surface. The author said though the wheels can be powered by foot, some models come with an electric motor option, however, flywheels weigh between 120 and 140 pounds, and the motors easily maintain momentum after the flywheel is turning.

Conversely, the treadle pottery wheel is easier to operate than the kick pottery wheel as the left foot is used to rock a treadle, rather than in a kicking motion, which rely on a foot-powered treadle mechanism to drive a flywheel. They once were common in English and American potteries and more lately mass-produced for both school and private studios (Jonathan, 2014). The author further said that the ubiquitous type is a sit-down version based on a design refined by Bernard Leach at the beginning of the 20th century; a legendary among potters who prefer the nonelectric wheel, probably because of the body exercises achieved while throwing compared to the electric wheel that is propelled by an electric motor; though does not need any manual meddling, but requires concentration completely on the work while the hands are doing.

Berg (2020) averred that wheel coiling RKE is applied to a vessel originally made of coils and can be introduced at different stages of the forming process. And while pots are made by coiling and then thinned or smoothed on the potter's wheel at its most basic, a coil is added and 'thrown' at its most advanced. Common features mirror those of wheel-thrown pots, nonetheless are less nonstop and regular. The potter's wheel runs at speeds sufficiently high to develop RKE which is used by the potter to pull up and shape the clay with bilateral movements the author added. Although most potting activities fall within a range of 50–120 rpm, however, the author attested that both can reach a maximum speed of 220–230 rotations per minute (rpm). The author went further to say that a simple wheel consists of one single, a heavy wheel that serves both as the flywheel and the putting surface, which is activated by either a stick or hand – either by the potter or an assistant. And the momentum is stored in the heavy wheel and steadily slow down as the potter works; a pivoting axis is set in the ground, depending on its length, which may also need stabilizing.

Although improvisation is often viewed as the second-best solution to design problems according to the foregoing authors, however, it is still crucial to developing nations such as Nigeria, whose technology is hitherto at an infant stage. The problem of the study includes thus: the theoretical knowledge with no hands-on experience by a significant number of ceramic students who despite the advantages of using electric throwing wheels are deprived of due to their short in supply, the high cost due to the harsh policies on importation by the Federal Government of Nigeria, and the lack of synergy among the departments (for example, mechanical engineering, electrical engineering, and industrial design) in the school of technology that disfranchises productive alliances such as leveraging the fabrication of local machines.

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The main aim of the study is to repurpose a bucket, ceiling fan motor, and sewing machine regulator for the construction of an electric potter's wheel for studio demonstration, to alleviate their scarcity for demonstration in formal institutions of learning apprenticeship. Improvisation of a prototype potter's electric wheel (PEW); inspire the lifeforce of improvisation through conceptualization; provide wheels that are affordable and operational by a simple generator when electric supply (national grid) fails during the demonstration; revalidation of some principles: rotational kinetic energy (RKE) by Berg (2020) and Development Cycle by Lidwell, Holden, and Butler (2015); motivate and enhance entrepreneurial development among ceramics and engineering graduates that might explore it as means of livelihood. This will reduce unemployment, which in turn minimizes restiveness as well as other vices among especially the youth; and enhance local technology which is achieved through the following objectives:

- i. conceptualize design via drawings of an adaptable prototype design of electric wheel;
- ii. identify bucket, sewing machine accelerator/pedal, and ceiling as viable components;
- iii. assemble of the components; and
- iv. Assess the performance of the electricity of the prototype PEW.

MATERIALS AND METHODS

The materials used in this project include a ceiling fan motor, sewing machine regulator, iron buckets, German plywood ½ inch, 1inch screw nails, bolts and nuts, and 3-pin plug heads sourced from within the Yola metropolis.

METHODOLOGY

The experimental method was deployed for the setup given the idea of repurposing via assemblage while adopting the principles of the *Development Cycle* by Lidwell, Holden, and Butler (2015), which advocates four stages of creation known as requirements, design, development for any successful product, and testing, and the principle by Berg (2020) that states that the potter's wheel runs at speeds sufficiently high to develop RKE for the potter to pull up and shape the clay with two-sided movements.

First Step: Concept Development – The fabrication procedures began with design as planning and making that determines the success via how product design (Webster's Comprehensive Dictionary, 2013); see Figure 1. This was attained through concept development - from brainstorming on the selection of viable component parts to their assemblage into an electric wheel prior testing the final experimental setup as opined by Lidwell, Holden and Butler (2015).

Second Step – The freehand drawings were drawn and redrawn using a computer for better clarity. The drawings include the labeling and dimensioning of the different parts of the components (see Figure 2). Also, a design that an iterative process and design thinking and client brief to finished work (Ambrose and Harris, 2010) was adopted how ideas are translated to the stages of the decision on the material to be used for the electric wheel.

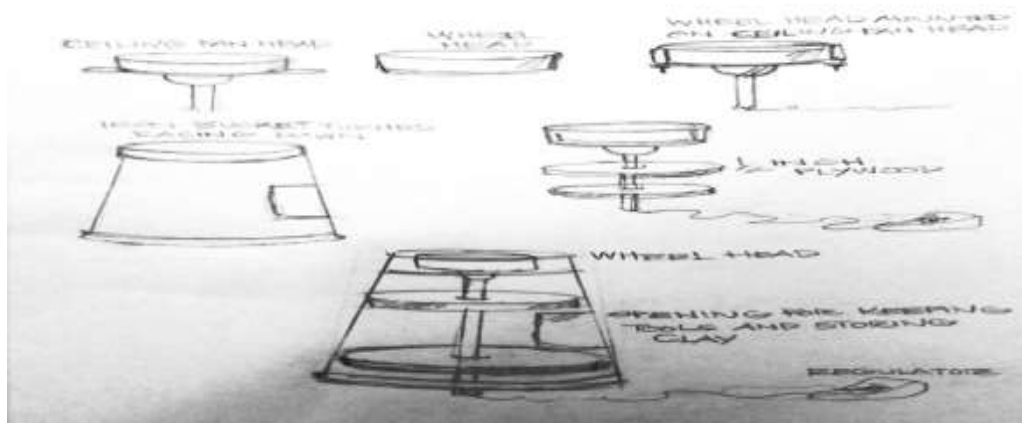


Figure 1: Freehand drawing of parts

Third Step: Assemblage – The stage of development culminates with the adoption of design specifications transformed into an actual product in accordance to Lidwell, Holden, and Butler (2015) as seen in Figure 2a-f by selecting components in a detailed and meaningful way from product concepts, concept testing applied to the developed product concepts in line with Gurbuz's (2018) adopted for this project by the researchers who were exposed to the components (a: ceiling fan head (motor); b: wheel head; c: wheel head mounted on ceiling fan head; d: iron bucket turned facing downward; e: 1 inch plywood; and f: assembled parts that formed the electric potter's wheel) based the selection of appropriate ones for this project. The Plates 1-3 were finally composed into an electric potter's wheel as seen in Plate 4, translated from Figure 2f.

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Mr. Ochai to Perfect this: The head was fixed by placing the plywood on the electric fan motor head (Fig...). The rod extending from the ceiling was fixed in the center of the two flying wheels to enable the balance for the centrifugal force to take place while throwing. The pedal of the sewing machine is connected to the base frame by positioning both the frame and the pedal on the same axis. The hole in the pedal meets the frame hole, both are connected by fastening them with the nuts and bolts. The connecting link which connects the sewing machine pedal and the wheel is fixed by using the fasteners between the wheel and the pedal. The electric motor is fixed with a separate mild steel angle which is welded with the base frame to carry the motor. The steel angle is drilled for holding the motor. The fasteners are used to fix the motor into the mild steel angle. ...is fixed with the horizontal shaft. fixed with a vertical shaft for the r pottery wheel's rotary motion. Both the wheel head and the two flying wheels are fixed with the shafts ,, The angle between both the bevel gears is fiat with 90 degrees. After all the arrangements the wooden wheel which is used for the pottery-making process is fixed by using fasteners. All the components are arranged according to the drawings in Figures 1 and 2.

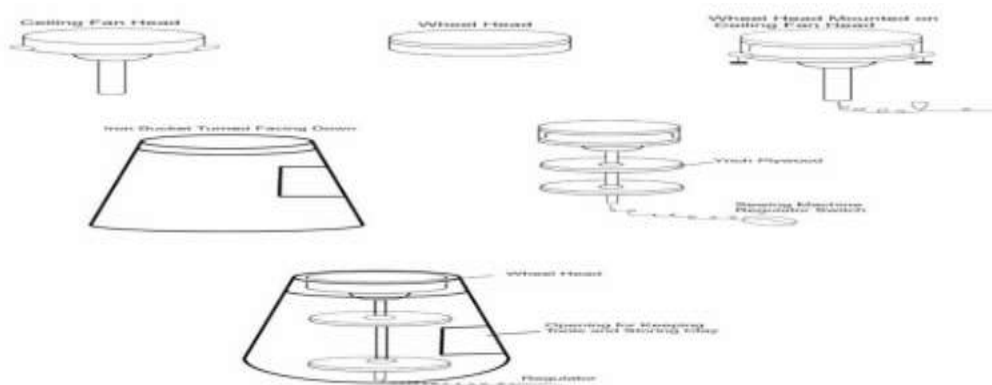


Figure 2a-f: Computer-Aided drawing of parts

Fourth Step: Testing – The prototype electric potter's wheel was tested after it is been assembled in accordance to the design procedures. The testing involved the use of 2kg mass of leather-hard clay to throw cylinder and bowls.



Plate 1: Ceiling Fan Motor



Plate 2: Metal basin fixed on a metal bucket



Plate 3: Wheel head



Plate 4: Complete Electric Potter's Wheel

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RESULTS AND DISCUSSIONS

The results obtained from the concept of improvisation of an electric throwing wheel from the repurposed bucket, ceiling fan motor, and sewing machine regulator (pedal) for pottery demonstration is very satisfactory for the people who never had a hands-on experience of an electric wheel for the pottery making process revealed, thus:

The concept of improvisation showed it could remove abstraction(s) in learning theories as it is tangible, handy, and concrete as it clears the issue of unavailability of the materials in the school system; teachers and learners get a better understanding of the concept being taught; involving critical thinking, creativity; encourages teamwork, provide teaching materials from immediate locality when in shortage or lack of the standard ones (Babatunde and Aguemeka, 2020 and Spontaneous Education LLC (Sponted.com) (2015). This is revealed in the study of Eweka and Okwuba (2016) which suggests schools of arts and design exploit and explore the foregoing concept - who fabricated throwing wheel heads from the discarded can (containers). This is in line with Simbelis, Ferreira, Vaara & Laaksolahti (2016) who see the reusing of materials as a strategy to deal with the mass consumption of goods and the elimination of waste besides recycling; and the repurposing or upcycling of different artifacts. The yielded results also confirmed to the efficacy of the principle of cost-benefit by Lidwell, Holden, and Butler, (2015), which states that the value of a thing is a function of its cost of acquisition and use versus the benefits it.

The results from the developed concept by freehand drawings (see Figure 1) as a requirement which is a specification the developers used to create (Iakoch, Borsato, Schmidt & Vaine, 2019 and Morar & Kemper, 2016), which is based on facts collection via market research, customer feedback, focus groups, and usability testing (Lidwell, Holden and Butler, 2015) was successfully done. However, the design requirement selected for this study was derived from direct knowledge or experience encountered by researchers (Daniel, Ochai, Abubakarr and Ibrahim); the conversion of the process to the design specification used by Wei, Liu, Lu and Wuest (2015) idea of the electric device, which conforms to standards with CAD (Velling, 2020 and Lopol.org., 2020) as seen in Fig 2.

Likewise, results from using the sewing machine accelerator provided the needed acceleration, the ceiling fan motor turned in accordance to the envisaged speed. The splashing while throwing was minimized with aid of the metal bucket. The wheel head fitted well on the ceiling fan motor metal with the aid of the bolts and nuts, and the rod that runs through that connects the components at that center provided the centrifugal movement. The opening created as storage on the bucket though not compulsory, helps in space management and safety for tools. Therefore, the assemblage of the components was successful as the nuts-and-bolts principle was adopted.

Also, the results showed that the speed of 50 revolution per minute (rpm) for throwing cylinders and bowls of various heights and widths up to 6" (height) and 6" (width) can be thrown. The result of the electric wheel showed its capacity to speed 200 rpm. which is sufficient to center a 2kg of a well-prepared mass of leather hard clay. Though generally, the throwing of a single pot is nearly 15 to 20 minutes for 1 kilogram, by using this wheel, the time taken is reduced to 10 to 15 minutes, hence the rate of production is increased. Also, the manual work needed for pottery wheel rotation has been reduced by the motor. While the number of beakers produced is dependent on factors viz: potter's or thrower's dexterous skill and the workable consistency of the clay lump. However, with all things being equal, at least a beaker was produced in 4 - 5 minutes. Therefore, in comparing the results of the electric throwing wheel from the repurposed bucket, ceiling fan motor, and sewing machine regulator for pottery demonstration, with the existing kick-wheels, it is obvious that the wheel from the repurposed components has advantages viz: cheap and faster.

While the results gave a glimpse into the possibilities of alleviating the current situation of the scarcity of potter's wheels (especially the electric types) for pottery demonstration in art and design schools/studios, it also revealed one of the ways of achieving it, thus repurposing of local contents. Similarly, the result showed the potential of reducing the reliance on importation. Also, the drawings could serve as templates should there be a need for mass production.

CONCLUSION AND RECOMMENDATIONS

The project was successful by providing a hands-on prototype electric potter's wheel for those that knew them only theoretically, without a hands-on experience of it. Also, the study can serve as a reference for future works that are in line with the concept of improvisation. In addition, the experience of using the manual wheels and electric ones is good exposure for potters when needed. The cost-effectiveness of this repurposed compared to the imported ones is laudable. The eco-friendliness of the project is inspiring as some of the components are salvaged from some metal dumps, hence reducing the environmental pollution. Also, the production of pottery items with lesser time and manual effort is accorded with this type of wheel as using it is likely to increase the rate of pottery production besides demonstration purposes.

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The recommendations of the study include the adoption of an improvisation concept for the construction of the wheels as an alternative to the costly imported ones. Also, given the human's continuous generation of wastes that need to be managed (Abubakar, Daniel and Bakare, 2013), repurposing wastes into product design (Aguirre, 2010) seeing the high cost of the industrially made electric wheels is advised. This agrees with the study of Eweka and Okwuba (2017) which advocates the use of wastes for functional equipment in ceramic studios. Likewise, furthering this research project is recommended as synergy between the students of industrial design and engineering for productive alliances.

Although the assembled electric wheel seems not better compared to the industrially manufactured ones, the aim to provide a demonstration one for those with only the theoretical knowledge of it with no hands-on experience was achieved.

The bigger motor could be used for higher capacity and the speed when throwing larger clay lump. Equally, the fact that the components are readily accessible at affordable cost is a benefit to reckon with given the performance assessment of the prototype electric wheel (PEW). Similarly, the design calculation as per the requirements should be included in the next attempt as this is just a concept of a prototype; to explore the possibility of improving the project for mass production.

REFERENCES

- 1) Abubakar, E., Daniel, K. P. and Bakare, O. O. (2013). Waste Management in Adamawa State: A Look at Jimeta Metropolis. *Journal for Arts and Ideas*. Department of Fine Arts, Obafemi Awolowo University. Pp 86
- 2) Aguirre, D. (2010). Design for Repurposing A sustainable design strategy for product life and Beyond. <https://core.ac.uk/download/pdf/55286555.pdf>.
- 3) Ahmad, M. F., Hoong, K. C., Hamid, N. A., Sarin, N., Zainal, R., Ahmad, A. N. A. and Hassan, M. F. (2018). The impact of product design and process design on new product performance in the manufacturing industry. <https://doi.org/10.1063/1.5055418>.
- 4) Ambrose, G., & Harris, P. (2010). *Design Thinking*. London: AVA Publishing.
- 5) Atkin, J. (2013). *250 Tips, Techniques and Trade Secrets for Potters*. The indispensable compendium of essential knowledge and troubleshooting tips. Quarto Publishing plc. The Old Brewery, 6 Brundell Street, London N7 9BH.
- 6) Babatunde, C. F. and Aguemeka, C. (2020). Improvisation of Instructional Materials Involving Colors for Effective Teaching in Fine and Applied Arts. *International Journal of Research and Scientific Innovation (IJRSI) | Volume VII, Issue II*. P. 169 <https://www.rsisinternational.org/journals/ijrsi/digital-library/volume-7-issue-2/169-173.pdf>.
- 7) Beaty, V. (2014). "100 Ways to Repurpose and Reuse Broken Household Items". *DIY & Crafts*. <https://www.diyncrafts.com/6081/repurpose/100-ways-repurpose-reuse-broken-household-items>.
- 8) Berg, I. (2020). The Potter's Wheel. https://www.research.manchester.ac.uk/portal/files/155421514/Berg_proof_with_corrections.pdf.
- 9) Daniel, K. P., Gadzama, R. M., Abubakar, E. and Mbdomti, S. A (2021). Development of Terracotta Table Nametag for Identification and Office Decoration (Part I). *FUTY Journal of the Environment Vol. 15 No. 3. Pp 21-31*. <http://creativecommons.org/licenses/by/4.0/>.
- 10) Gerber, E. (2007). Improvisation principles and techniques for design. DOI:[10.1145/1240624.1240786](https://doi.org/10.1145/1240624.1240786). https://www.researchgate.net/publication/221516785_Improvisation_principles_and_techniques_for_design/link/54da2bf90cf246475820b70d/download.
- 11) Egede, S.C. (2012). Adopting some commonly used equipment parts for the fabrication of burners for kiln firing. *Ashakwu Journal of Ceramics. Vol.9 June. pp 109*
- 12) Eweka, K. J. and Okwuba, C. J. (2016). Fabrication of throwing wheel heads from discarded aluminum can. Presented at the 13th Annual CeRAN Conference and Exhibition at the University of Nigeria, Nsukka: 25-28 October 2016.
- 13) Eweka, K. J. and Abraham, K. A. (2016). Production of a multi-functional kick wheel for small- scale ceramic industries in Nigeria. Presented at the 13th Annual CeRAN Conference and Exhibition at the University of Nigeria, Nsukka: 25-28 October 2016.
- 14) Gurbuz, E. (2018) *Theory of New Product Development and Its Applications*. https://www.researchgate.net/publication/326614550_Theory_of_New_Product_Development_and_Its_Applications.
- 15) Hornby, A, S. (2010). *Oxford Advanced Dictionary of Current English*.
- 16) [laksch](#), J., [Borsato](#), M., [Schimdt](#), J. and [Vaine](#), A. (2019). Requirements Engineering in the New Product Development Process: A Structured Literature Review. *Journal of Industrial Integration and Management 04(1)*. https://www.researchgate.net/publication/331065009_Requirements_Engineering_in_theNew_Product_Development_Process_A_Structured_Literature_Review.

Electric Throwing Wheel from Repurposed Bucket, Ceiling Fan Motor, and Sewing Machine Regulator for Pottery Demonstration

- 17) Jonathan, O. E. (2014). Manual Potter's Wheel Efficiency in Ceramics Production in Nigeria. *IOSR Journal of Humanities and Social Science (IOSR-JHSS) Volume 19, Issue 2, Ver. V (Feb. 2014), PP 01-05.* <https://www.iosrjournals.org/iosr-jhss/papers/Vol19-issue2/Version-5/A019250105.pdf>
- 18) Katz, D. A. (2005). The Art of Effective Demonstrations. <https://www.ualberta.ca/centre-for-teaching-and-learning/media-library/catalysts/design-multidomain-demonstrations/effective-demonstrations.pdf>.
- 19) Lidwell, W., Holden, K. & Butler, J. (2015). Universal Principles of Design. Rockport Publishers, Inc. 33. Commercial Street. Gloucester, Massachusetts. USA.
- 20) Lopol.org. (2020). ADVANTAGES AND DISADVANTAGES OF COMPUTER AIDED DESIGN (CAD) OVER MANUAL DRAFTING <https://www.lopol.org/article/advantages-and-disadvantages-of-computer-aided-design-cad-over-manual-drafting>© 2020.
- 21) LSU. Ag. Centre. Research & Extension (n.d). How to Give a Method Demonstration.
- 22) <https://www.lsuagcenter.com/MCMS/RelatedFiles/%7BD4E91CD0-EA91-4041-9326-C2BBF3694450%7D/How-to-Give-a-Method-Demonstration.pdf>.
- 23) McKee, E., Williamson, V. M. and Ruebush. L. E. (2007). "Effects of Demonstration Laboratory on Student Learning". *Journal of Science Education and Technology*. 16.5 (2007) 395-400.
- 24) Melanie, S. and Satu, M. (2018). The connective role of improvisation in dealing with uncertainty during invention and design processes. <https://www.researchgate.net/publication/326647576>
- 25) Morar, D. and Kemper, H. (2016). Requirements of Information Systems in Product Development and Production Regarding Additive Manufacturing – A Quantitative Exploration. https://aisel.aisnet.org/ecis2016_rp/83/.
- 26) Murugan, P. C., Tamilarasu, V., Tharani Dharan, N. P., Sreenithyanandan, R. S. and Vivek, R. S (2019). Automated Pottery Wheel for The Village Community to Manufacture Earthen Pots. *International Journal of Scientific & Technology Research Volume 8, Issue 12, pp 3042-3044.* <http://www.ijstr.org/final-print/dec2019/-Automated-Pottery-Wheel-For-The-Village-Community-To-Manufacture-Earthern-Pots-.pdf>.
- 27) Simbelis, V., Ferreira, P., Vaara, E. and Laaksolahti, J. (2016). Repurposing Bits and Pieces of the Digital. https://www.researchgate.net/publication/301935248_Repurposing_Bits_and_Pieces_of_the_Digital.
- 28) Spontaneous Education LLC (Sponted.com) (2015). <https://sunflowercreativearts.org/wp-content/uploads/2015/11/Benefits-of-Improvisation.pdf>
- 29) The new international Webster's comprehensive dictionary of the English language: encyclopedic edition (2013).
- 30) Velling, A. (2020). Why Every Engineer Should Be Using CAD Advantages of CAD. <https://fractory.com/cad-advantages/>.
- 31) Wei, W., Liu, A., Lu, S. C. Y. and Wuest, T. (2015). Product Requirement Modelling and Optimization Method based on Product Configuration Design. *Procedia CIRP 36 (2015) pp. 1-5* <https://cyberleninka.org/article/n/475635/viewer>.



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Black Bean: Composition, Protein Extraction and Functional Properties



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ABSTRACT: Black beans play an essential part in the human diet due to their high protein content and nutritional value. Black beans are high in energy, dietary fiber, protein, minerals, and vitamins, and they have well-balanced essential amino acid profiles. The production of black bean protein concentrates or isolates is of growing interest to food industry because of their functional properties and ability to improve the nutritional quality of food products. Various procedures are used to obtain protein concentrates / isolates with varying properties. Because of desired functional features such as gelling and emulsifying properties, black bean proteins have grown in popularity and could be presented as a potential supplement in a wide range of food applications. This review provides an overview of the chemical composition of black bean, current and emerging techniques for producing their protein concentrates / isolates, and major functional properties.

KEYWORDS: chemical composition, protein isolate, functional properties

I. OVERVIEW OF BLACK BEANS

Black beans which their scientific name is *Vigna cylindrica* (L.) Skeels belong to the Leguminosae family (Price & Butler, 1977). They are generally found in lowlands but can grow up to 1800 m above sea level (Arora & Mauria, 1989) in tropical climate with optimal temperatures from 25°C to 35°C. They are grown mainly in India, Pakistan, Iran and Southeast Asia like Vietnam, Thai Lan, Myanmar (Arora & Mauria, 1989) . Also, they are cultivated in the USA and Australia as a fodder crop. In Vietnam, black bean is grown widely especially in Central Highlands's provinces such as Dak Lak and Gia Lai with domestic productivity estimated at 200,000 tons per year. Black grams are reported as a valuable source of protein, fiber, several B-complex vitamins and essential minerals (iron, phosphorus, calcium, magnesium and zinc) (DK, 1985). Moreover, phenolic compounds in black gram act as antioxidants to prevent the development of many diseases(López-Amorós, Hernández, & Estrella, 2006), reduce the risks of cancer, heart disease, and diabetes; inhibit plasma platelet aggregation, cyclooxygenase activity, and histamine release; as well as provide in vitro antibacterial, antiviral, anti-inflammatory, and anti-allergenic activities (Karladee & Suriyong, 2012) various foods. They can be processed into dehusked cotyledon to make fermented foods such as idli, dosa, and non-fermented foods like cooked dhal, hopper, papad and waries (spicy hollow balls)(Batra & Millner, 1974). Moreover, black grams can be added into buffalo meat burgers and beef sausages to improve the quality (Chaudhry & Ledward, 1988; Modi, Mahendrakar, Rao, & Sachindra, 2004) or into biscuits to enhance the nutritional value (Patel & Rao, 1995). Except cotyledon fraction, the other fractions of black grams like seed coat, germ, aleurone layer and plumule may contain many nutrients and be used as animal feed.

In Vietnam, there are two main types of black beans: white kernel and green kernel black beans. Green kernel black beans have smaller sizes, which are half of white kernel ones. They are also considered as an important ingredient of diet as well as the most significant food sources for people of low incomes based on the larger amount of nutrition components (protein, minerals, vitamin, and so on) and the inexpensive price. Although green and white kernel black bean belong to the same family, their nutritional values are also different. Green kernel black beans are also believed to have higher levels of antioxidants with a good source of anthocyanin content. As a result, green kernel black bean can be used to prevent many diseases (cardiovascular, cancer, diabetes and so on), help to lower blood pressure, control diabetes, maintain a good digestive system and nervous system. Moreover, they are also good for women, especially pregnant women by supporting fertility and helping in cure of anemia. Although both green and white kernel black beans bring many benefits for human, there is no scientific information about their nutritional values, the differences in their composition, especially in protein content (amino acids composition, the

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morphology, the chemical structure and so on) which is required more studies for further applications in the future. Chemical composition of green and white kernel black bean was shown in the Table 1.

Table 1: Chemical composition of green kernel and white kernel black bean

Sample	Protein	Lipid	Ash	Total carbohydrate	Dietary fiber	References
White kernel black bean	21.06 ±0.3	1.68 ±0.26	4.2 ±0.04	59.43 ±1.22	3.06 ±0.07	(Mariscal-Moreno, Chuck-Hernández, Figueroa-Cárdenas, & Serna-Saldivar, 2021)
Green kernel black bean	24.02 ± 4.2	10.18 ±0.04	3.51 ±1.5	48.08 ±2.6	14.21 ±7.0	(LE, LE, Nguyen, & Vu, 2021)

II. OVERVIEW OF PROTEIN

Proteins are large biomolecules and macromolecules that are made up of one or more long chains of amino acids which linked together by peptide bond (Bigman & Levy, 2020; Małeck, Muszyński, & Sołowiej, 2021). A linear chain of amino acid residues is called a polypeptide and at least one long polypeptide can be found in a protein. Due to the complicated metabolic changes required to function two processes continuously, such as the synthesis and breakdown of the body's proteins, protein is a critical nutrient in the human diet for analyzing the body's needs. Firstly, proteins are known as the primary structural and functional components of human body cell, controlling gene expression and vital for the appropriate growth and development of the young organism. They function as biocatalysts in a variety of enzymatic systems (Sá, Moreno, & Carciofi, 2020). Proteins are also responsible for transferring oxygen (hemoglobin), iron (transferrin), and retinol (eight-stranded β -barrel proteins that bind extracellular retinoids, such as retinol-binding protein 4 and epididymal retinoic acid-binding protein). Actin and myosin are also muscle-contractile proteins that help in tissue repair and regeneration. Proteins are also considered as antibodies which enhance immune system. Many hormones and physiologically active substances, including as adrenaline, noradrenaline, thyroid hormones (thyroxine, triiodothyronine), histamine, and serotonin, are synthesized by using proteins as substrates. They also play a role in the production of biologically active molecules such as purine and pyrimidine bases (components of nucleotides and nucleic acids), choline (a component of phospholipids), glutathione, creatine, and a variety of other substances involved in physiological activities (Van Vranken & Weiss, 2018).

Besides the health benefits, proteins also play an essential role in the food industry. Due to hydrophilic and hydrophobic properties, proteins are applied as emulsifiers and stabilizers which can improve the texture of food. For example, emulsified meats are the one of first applications of isolated soy protein. In other to improve spread ability and prolong storage stability, protein can be modified by using acetylation process to increase emulsification properties. In mayonnaise and salad dressings, modification of egg yolk proteins improves the product quality. In addition to their ability to stabilize emulsions or foams, proteins can influence on the shelf-life and stability of foods by enhancing antioxidant activity, affecting gas exchange when used as packaging biomaterials and edible coatings and, for some proteins and peptides, their antimicrobial activity (Moreira, Pereda, Marcovich, & Roura, 2011; Wimley, 2010). For example, nisin is a potent antibacterial peptide containing a number of uncommon amino acids that is used as a food preservative in cheese (Martins, Cerqueira, Souza, Carmo Avides, & Vicente, 2010), fish, meat and beverages (Lubelski, Rink, Khusainov, Moll, & Kuipers, 2008). Another peptide, ϵ -poly-l-lysine, exhibits antimicrobial activity which eliminates the growth of bacteria and fungi (Hamano, 2011).

There are two main types of protein which are available in the food include complete and incomplete protein. Foods that are a 'complete' protein source contain an adequate proportion of the nine essential amino acids that are needed to support biological functions in humans or other animals. Examples include proteins derived from animal foods (meats, fish, poultry, milk, eggs) and proteins derived from some plant foods (e.g., legumes, seeds, nuts and grains such as chickpeas, black-eyed peas, black beans, cashews. Some foods that are incomplete protein sources may contain all the essential amino acids, but not in the correct proportions, being deficient in one or more. For example, cereals such as maize (corn) contain lower amounts of lysine, isoleucine, methionine and threonine. Combining a cereal with a legume, such as maize with beans, soybeans with rice, or red beans with rice, provides a meal that is balanced with higher amounts of all essential amino acids.

Proteins play an important role in human nutrition which provide a good source of amino acids and nitrogen for maintaining muscles in good condition, control the immune responses, repair cells and improve their signaling (Wen et al., 2019). In addition to supplying various amino acids in the human diet, proteins are also considered as very important components in food formulations due to their desirable functionalities, including thickening and gelling ability, emulsifying, foaming, water holding and fat absorption (Cao, Bolisetty, Wolfisberg, Adamcik, & Mezzenga, 2019; Cao & Mezzenga, 2019). As a result, the demand for

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protein consumption is more and more increased and this becomes a key challenge in the developing country due to the decrease in food resources and the limitation of acceptance. It is estimated that there is nearly 25% of the world population lack suitable protein supply (Azam, Khan, Ahmad, Khan, & Ali, 2014). Based on their desirable properties including their high yield and essential amino acids content with right balance signaling, animal-based proteins is considered as the most common protein used in the world (Wen et al., 2019). Despite of these advantages, developing renewable and sustainable replacement for animal-based proteins has gained more attention because of their adverse effects on the environment, high cost, limited availability and limited acceptance by some consumers such as vegetarians and vegans. Moreover, the consumption of animal proteins may have detrimental consequences for human health such as high blood pressure and obesity (Hu, 2005; Richter, Skulas-Ray, Champagne, & Kris-Etherton, 2015). Legumes, with the high protein content, have the potential to succeed in the plant protein ingredient market because they are not cause allergens such as soy, peanut, whey and wheat, milk and eggs do. Furthermore, legume protein is considered as the low-cost, environmental-friendly and animal-friendly products which can subsequently be used as functional ingredients.

III. PROTEIN IN BLACK BEANS

Black beans are known as the good source of protein, in which their protein content are higher than that of soybean and even that of meat, eggs, or milk. The protein content of black beans is around 20–25%, which makes these grains an attractive source of proteins for extraction and modification. Black beans not only contain optimal source of high-quality protein but also provide a favorable balance of amino acids such as leucine, lysine and phenylalanine (Duranti, 2006). Protein in black bean has a wide range of beneficial effects on the human nutrition and health such as lowering of plasma cholesterol, prevention of cancer, diabetes and obesity, and protection against bowel and kidney disease (Duranti, 2006).

In the present day, malnutrition has been becoming the serious problem in the developing country due to the high price of animal. Thus, black bean is known as an inexpensive alternative for the animal-based protein with the similar nutrition value. Because of the high amount of protein content, black bean can be applied to produce protein concentrates (at least 70% of protein) and protein isolates (more than 90% of protein). Protein isolates or concentrates obtained from black beans have become important in the food industry. In formulations containing oil, proteins can be applied as emulsifiers to form and stabilize an emulsion; the black bean proteins must be capable of migrating to the oil/water interface and forming an interfacial layer. The black bean protein stabilized fat globules must also be capable of repelling each other, in order to avoid flocculation or coalescence (McClements, Bai, & Chung, 2017). Moreover, protein from black beans is recommended to be used as a suitable ingredient for infant food formulations as well as for gels, puddings, ice cream, baked goods, among others or for protein supplementation. However, in Asia, crude protein extracted from black beans are not commonly applied in the food industry, instead that they are thrown away as a by-product in starch process (Khaket, Dhanda, Jodha, & Singh, 2015). Because of these characteristics, the obtainment of crude black bean protein has raised the interest of many researchers due to the raise of nutritional value into food through a low cost when incorporated into food.

IV. METHOD FOR EXTRACTION OF PROTEIN

4.1 Traditional methods for protein extraction

Several methods used for plant-based protein extraction consist of acid, alkali, and ionic strength modulation in solution. The main principle of their methods is based on cell disruption and protein solubilization. Since proteins are contained in protein bodies inside cell walls cell disruption such as homogenization and colloid milling is required before they can be totally solubilized and extracted. After cell components are disintegrated, protein solubilization will be employed to separate proteins in the sample selectively from different substances that may interfere in the proteomic assay. This process can be finished by using organic solvents such as acetone, TCA or aqueous solutions as altering pH level, salt concentration, and ionic strength. Aqueous alkaline extraction is considered as the most common method for protein extraction. In this method, sodium hydroxide is used to dissolve the soluble proteins and then break hydrogen, amide and disulfide bonds for improvement in extraction yield (Fabian & Ju, 2011). Compared to other methods, alkaline extraction is believed to be easy to conduct, have the low cost and moderately high yield (Damerval, De Vienne, Zivy, & Thiellement, 1986). For example, protein content extracted from alkali resulted in a higher amount which is approximately 50% of total content in soy—whereas acid extraction reached a maximum of 20% for yellow pea protein; salt extraction gave 15% protein extraction yield at pH 4.5 and 90% at pH 11 from *Rosa rubiginosa*. Due to less cell wall breakdown and protein solubility at the isoelectric point, acid-based extraction is less promising (Pojić, Mišan, & Tiwari, 2018). Furthermore, in the research of (Chakraborty, Sosulski, & Bose, 1979), protein isolate from legume extracted by alkaline extraction (pH 8.5) was over than 80% including 90.5% protein for chickpea protein isolate, 90.1% for pea protein isolate, 91.2% for Great Northern bean isolate, 89.3% for lentil protein isolate, 91.2% for lima bean isolate and 88.3% for

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mung bean isolate. (Paredes-López, Ordorica-Falomir, & Olivares-Vázquez, 1991) used similar conditions for alkaline extraction method has been found a protein isolate from chickpea is about 84.8% protein However, the extraction of proteins with alkaline extraction have the disadvantages of a low protein recovery (Sawada, Venancio, Toda, & Rodrigues, 2014), large processing times and contamination by solvents. Although alkaline extraction is a more environment friendly than organic solvent extraction, it may affect the quality of the protein and the extraction rate is also low. Besides, extremely alkaline solution may still cause some possible safety or nutritional problems of protein, which preferably has to be avoided (Hamano, 2011).

4.2 Modern methods for protein extraction

Many modern and innovative methods have been carried out to enhance the extraction yields of protein from plant-based substrates and reduce the limitation of traditional methods such as microwave heating, extrusion, supercritical fluid extrusion, ultrasound, pulsed electric field, gamma irradiation, and high-pressure processing of the substrate (Karki et al., 2009). The general principle of these eco-innovative technologies is damage cell walls to facilitate liquid diffusion into cell and protein dissolution and release into the liquid medium, which significant increase the extraction yield. For example, microwaves at 725 W for 8 min increased protein extraction by 77% from defatted peanut flour slurry (Ochoa-Rivas, Nava-Valdez, Serna-Saldívar, & Chuck-Hernández, 2017); ultrasound at 2.56 W/mL for 2 min increased protein 34% from defatted soy flakes (Karki et al., 2009); 100 MPa pressure on soy slurry yielded up to 82% protein; and 20 kV/cm of electric field increased proteins yield up to 80% from rapeseed leaves (Pojić et al., 2018).

V. FUNCTIONAL PROPERTIES OF BLACK BEAN PROTEIN

Functional characteristics of protein play an important role in foodstuff processing, food product formulation as well key interest to manufacturers of pharmaceutical and cosmetic products. Proteins can have surface properties such as the ability to form or stabilize emulsions (interfacial oil/water interface), the ability to create or stabilize foams (interfacial air/water interface), or solubility (combining the connections between water and proteins). In addition, proteins have hydrodynamic properties based on intermolecular interactions, including gelation, texture, and molding sensory properties (taste and smell) (Foegeding & Davis, 2011). The functional properties of proteins depend directly on the physicochemical properties of protein such as their molecules structure, size, shape, susceptibility to denaturation, flexibility, amino acid composition, hydrophilicity and hydrophobicity, the charge distribution in the molecule, the nature and number of micro domain structures, the ability of the entire molecule or its constituent domains to adapt to changing environmental conditions, and the nature of the interrelationships between different proteins and other food components (Yada, 2017). The functional properties of proteins are also affected by important environmental factors in the protein's location, such as pH, temperature, pressure, and ionic strength (Wijaya, Patel, Setiowati, & Van der Meeren, 2017). Proteins form complex systems with other food ingredients that affect the formation of their functional properties, and additionally, technological processes play a significant role in shaping proteins 's functional properties (Lam & Nickerson, 2013). In most proteins, many hydrophilic functional groups are located on the surface of the molecules. However, the hydrophobic groups are not entirely located inside them. In globular proteins, 40–50% of the molecule's surface may be occupied by hydrophobic amino acid residues (Gruner et al., 2016). Their specific distribution in the polypeptide chains affects the surface formation of protein molecules, the ability to create oligomers and micellar structures, and functional properties (Udgaonkar, 2013).

VI. CONCLUSIONS

Black bean protein are food resources that offer various health benefits. Black bean protein have many good qualities and can be considered most suitable for the preparation of protein isolates because of their high protein content, low cost and wide acceptability. Various methods are used for protein extraction and every technique has its own advantages. The functionality of proteins is closely related to their physical and chemical properties, such as molecular weight, amino acid composition and sequence, structure, surface electrostatic charge, and effective hydrophobicity. Because of the functional properties of protein isolates, their application to food products is increasing.

REFERENCES

- 1) Arora, R., & Mauria, S. (1989). Vigna mungo (L.) Hepper. Record from Proseabase. *PROSEA (plant resources of South-East Asia) foundation. PROSEA Project, Bogor.*
- 2) Azam, S., Khan, Z., Ahmad, B., Khan, I., & Ali, J. (2014). Production of single cell protein from orange peels using *Aspergillus niger* and *Saccharomyces cerevisiae*. *Global Journal of Biotechnology & Biochemistry*, 9(1), 14-18.

Black Bean: Composition, Protein Extraction and Functional Properties

- 3) Batra, L. R., & Millner, P. D. (1974). Some Asian fermented foods and beverages, and associated fungi. *Mycologia*, 66(6), 942-950.
- 4) Bigman, L. S., & Levy, Y. (2020). Proteins: molecules defined by their trade-offs. *Current Opinion in Structural Biology*, 60, 50-56.
- 5) Cao, Y., Bolisetty, S., Wolfisberg, G., Adamcik, J., & Mezzenga, R. (2019). Amyloid fibril-directed synthesis of silica core-shell nanofilaments, gels, and aerogels. *Proceedings of the National Academy of Sciences*, 116(10), 4012-4017.
- 6) Cao, Y., & Mezzenga, R. (2019). Food protein amyloid fibrils: Origin, structure, formation, characterization, applications and health implications. *Advances in colloid and interface science*, 269, 334-356.
- 7) Chakraborty, P., Sosulski, F., & Bose, A. (1979). Ultracentrifugation of salt-soluble proteins in ten legume species. *Journal of the Science of Food and Agriculture*, 30(8), 766-771.
- 8) Chaudhry, S. S., & Ledward, D. (1988). Utilization of black gram flour in beef sausages. *Meat science*, 22(2), 123-130.
- 9) Damerval, C., De Vienne, D., Zivy, M., & Thiellement, H. (1986). Technical improvements in two-dimensional electrophoresis increase the level of genetic variation detected in wheat-seedling proteins. *Electrophoresis*, 7(1), 52-54.
- 10) DK, S. (1985). Post harvest biotechnology of food legumes. *Post Harvest Biotechnology of Food Legumes*.
- 11) Duranti, M. (2006). Grain legume proteins and nutraceutical properties. *Fitoterapia*, 77(2), 67-82.
- 12) Fabian, C., & Ju, Y.-H. (2011). A review on rice bran protein: its properties and extraction methods. *Critical reviews in food science and nutrition*, 51(9), 816-827.
- 13) Foegeding, E. A., & Davis, J. P. (2011). Food protein functionality: A comprehensive approach. *Food Hydrocolloids*, 25(8), 1853-1864.
- 14) Gruner, P., Riechers, B., Semin, B., Lim, J., Johnston, A., Short, K., & Baret, J.-C. (2016). Controlling molecular transport in minimal emulsions. *Nature communications*, 7(1), 10392.
- 15) Hamano, Y. (2011). Occurrence, biosynthesis, biodegradation, and industrial and medical applications of a naturally occurring ϵ -poly-L-lysine. *Bioscience, biotechnology, and biochemistry*, 75(7), 1226-1233.
- 16) Hu, F. B. (2005). Protein, body weight, and cardiovascular health—. *The American journal of clinical nutrition*, 82(1), 242S-247S.
- 17) Karki, B., Lamsal, B. P., Grewell, D., Pometto, A. L., Van Leeuwen, J., Khanal, S. K., & Jung, S. (2009). Functional properties of soy protein isolates produced from ultrasonicated defatted soy flakes. *Journal of the American Oil Chemists' Society*, 86, 1021-1028.
- 18) Karladee, D., & Suriyong, S. (2012). γ -Aminobutyric acid (GABA) content in different varieties of brown rice during germination. *Science Asia*, 38(1), 13-17.
- 19) Khaket, T. P., Dhanda, S., Jodha, D., & Singh, J. (2015). Purification and biochemical characterization of dipeptidyl peptidase-II (DPP7) homologue from germinated *Vigna radiata* seeds. *Bioorganic chemistry*, 63, 132-141.
- 20) Lam, R. S., & Nickerson, M. T. (2013). Food proteins: A review on their emulsifying properties using a structure-function approach. *Food chemistry*, 141(2), 975-984.
- 21) LE, N. L., LE, T. T. H., Nguyen, N. T. M., & Vu, L. T. K. (2021). Impact of different treatments on chemical composition, physical, anti-nutritional, antioxidant characteristics and in vitro starch digestibility of green-kernel black bean flours. *Food Science and Technology*, 42, e31321.
- 22) López-Amorós, M., Hernández, T., & Estrella, I. (2006). Effect of germination on legume phenolic compounds and their antioxidant activity. *Journal of Food Composition and Analysis*, 19(4), 277-283.
- 23) Lubelski, J., Rink, R., Khusainov, R., Moll, G., & Kuipers, O. (2008). Biosynthesis, immunity, regulation, mode of action and engineering of the model lantibiotic nisin. *Cellular and molecular life sciences*, 65, 455-476.
- 24) Małecki, J., Muszyński, S., & Sołowiej, B. G. (2021). Proteins in food systems—Bionanomaterials, conventional and unconventional sources, functional properties, and development opportunities. *Polymers*, 13(15), 2506.
- 25) Mariscal-Moreno, R. M., Chuck-Hernández, C., Figueroa-Cárdenas, J. d. D., & Serna-Saldivar, S. O. (2021). Physicochemical and nutritional evaluation of bread incorporated with ayocote bean (*Phaseolus coccineus*) and black bean (*Phaseolus vulgaris*). *Processes*, 9(10), 1782.
- 26) Martins, J. T., Cerqueira, M. A., Souza, B. W., Carmo Avides, M. d., & Vicente, A. A. (2010). Shelf life extension of ricotta cheese using coatings of galactomannans from nonconventional sources incorporating nisin against *Listeria monocytogenes*. *Journal of Agricultural and Food Chemistry*, 58(3), 1884-1891.
- 27) McClements, D. J., Bai, L., & Chung, C. (2017). Recent advances in the utilization of natural emulsifiers to form and stabilize emulsions. *Annual review of food science and technology*, 8, 205-236.

Black Bean: Composition, Protein Extraction and Functional Properties

- 28) Modi, V., Mahendrakar, N., Rao, D. N., & Sachindra, N. (2004). Quality of buffalo meat burger containing legume flours as binders. *Meat science*, 66(1), 143-149.
- 29) Moreira, M. d. R., Pereda, M., Marcovich, N. E., & Roura, S. I. (2011). Antimicrobial effectiveness of bioactive packaging materials from edible chitosan and casein polymers: assessment on carrot, cheese, and salami. *Journal of Food Science*, 76(1), M54-M63.
- 30) Ochoa-Rivas, A., Nava-Valdez, Y., Serna-Saldívar, S. O., & Chuck-Hernández, C. (2017). Microwave and ultrasound to enhance protein extraction from peanut flour under alkaline conditions: Effects in yield and functional properties of protein isolates. *Food and Bioprocess Technology*, 10, 543-555.
- 31) Paredes-López, O., Ordorica-Falomir, C., & Olivares-Vázquez, M. (1991). Chickpea protein isolates: physicochemical, functional and nutritional characterization. *Journal of Food Science*, 56(3), 726-729.
- 32) Patel, M., & Rao, G. V. (1995). Effect of untreated, roasted and germinated black gram (*Phaseolus mungo*) flours on the physico-chemical and biscuit (cookie) making characteristics of soft wheat flour. *Journal of cereal science*, 22(3), 285-291.
- 33) Pojić, M., Mišan, A., & Tiwari, B. (2018). Eco-innovative technologies for extraction of proteins for human consumption from renewable protein sources of plant origin. *Trends in Food Science & Technology*, 75, 93-104.
- 34) Price, M. L., & Butler, L. G. (1977). Rapid visual estimation and spectrophotometric determination of tannin content of sorghum grain. *Journal of Agricultural and Food Chemistry*, 25(6), 1268-1273.
- 35) Richter, C. K., Skulas-Ray, A. C., Champagne, C. M., & Kris-Etherton, P. M. (2015). Plant protein and animal proteins: do they differentially affect cardiovascular disease risk? *Advances in nutrition*, 6(6), 712-728.
- 36) Sá, A. G. A., Moreno, Y. M. F., & Carciofi, B. A. M. (2020). Plant proteins as high-quality nutritional source for human diet. *Trends in Food Science & Technology*, 97, 170-184.
- 37) Van Vranken, D., & Weiss, G. A. (2018). *Introduction to bioorganic chemistry and chemical biology*: Garland Science.
- 38) Wijaya, W., Patel, A. R., Setiowati, A. D., & Van der Meeren, P. (2017). Functional colloids from proteins and polysaccharides for food applications. *Trends in Food Science & Technology*, 68, 56-69.
- 39) Wimley, W. C. (2010). Describing the mechanism of antimicrobial peptide action with the interfacial activity model. *ACS chemical biology*, 5(10), 905-917.
- 40) Yada, R. Y. (2017). *Proteins in food processing*: Woodhead Publishing.



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Corporate Sustainability Practices and the Financial Performance of Listed Financial Companies in Nigeria



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ABSTRACT: The study examined the effect of sustainability disclosure on the financial performance of listed companies in Nigeria. The study specifically examined the effect of social, environmental, governance and ESG disclosure indexes (proxies of sustainability disclosure) on ROA, ROE, EVA and Tobin's Q (proxies of financial performance). Ex-post facto and longitudinal research designs were used. The population consists of 49 financial companies listed on the Nigerian Exchange Group database as of May 29, 2022, with a sample size of 36 selected using purposive sampling technique. Data were collected from annual reports, websites of sampled companies, and NGX database based on GRI and ESG sustainability disclosures guidelines. Data were analysed using descriptive and inferential statistics (pooled OLS regression, fixed and random effects model). The study revealed that sustainability disclosure has significant effect on return on asset, economic value added, return on equity and Tobin's Q of listed companies in Nigeria. The study therefore recommends that all listed financial companies in Nigeria should be mandated to comply with the sustainability reporting guidelines in order to enhance financial performance, environmental, social and governance wellbeing of stakeholders.

KEYWORDS: ESG disclosure, environmental sustainability, social sustainability, governance sustainability, financial performance.

1 INTRODUCTION

Corporate sustainability practice involves purposeful and strategic actions taken by companies to operate in a manner that is socially responsible, environmentally aware, and economically sustainable. It entails incorporating sustainable values and practices into all facets of a company's activities, encompassing areas such as governance, supply chain management, environmental impact reduction, social responsibility, and engagement with stakeholders. Embracing a new era of conscientious business practices, corporate sustainability has emerged as a captivating force, challenging the conventional norms of profit-driven enterprises. In a world grappling with environmental crises and social inequality, companies have recognized the urgency to take responsibility for their actions. Corporate sustainability ensures that businesses strive not only for economic success but also for a harmonious coexistence with the planet and its inhabitants (Adobe Inc., 2023).

The problem, therefore, is that businesses in Nigeria are experiencing collapse due to declining profitability (Abdulkareem *et al.*, 2021) and the activities of businesses are contributing to the environmental degradation, resource depletion, economic, and social problems (Emmanuel & Erinoso, 2022); hence, the need to assess the effect of sustainable activities on the financial performance of listed financial companies in Nigeria. To illustrate, the operations carried out by oil and gas sectors lead to incidents like oil spills, the burning of gas, and the discharge of hazardous substances and contaminants into the atmosphere and water bodies. Similarly, manufacturing firms contribute to pollution through activities like manufacturing chemicals, producing cement, and processing food. All these activities have detrimental effects on the environment, economy, and society as a whole (Gold & Taib, 2020), thereby affecting the ability of firms in Nigeria to maximize profit.

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The broad objective of the study was to assess the effect of corporate sustainability practice on the financial performance of listed financial companies in Nigeria. Specifically, the study examined the effect of sustainability disclosure on return on equity, EVA, return on asset and Tobin's Q of listed financial companies in Nigeria. The study is limited to these objectives because it revealed the effect of firms' participation and disclosure of environmental, social and governance issues on the financial performance of listed financial companies in Nigeria. The study statistically evaluated the following hypotheses at 5% level of significance.

2. LITERATURE REVIEW

The concepts, underpinning theory, empirical review, gaps identified, and conceptual framework are discussed in this section.

Corporate Sustainability Practices

The phrase "sustainable development," popularised at the 1992 Rio Earth Summit, inspired the term "sustainability." The Brundtland Report for the World Commission on Environment and Development (1992) defined sustainable development as satisfying current generation requirements without jeopardising future generations' ability to meet their own (SEC, 2018). Corporate sustainability practise refers to a company's reporting of environmental, social, and governance (ESG) metrics and information to stakeholders such as investors, customers, employees, and communities about its sustainable strategies (social, environmental, and economic), policies, and goals. According to Ikram *et al.* (2020), corporate sustainability is seen as a critical paradigm and solution in constructing a prosperous future for firms.

Corporate Sustainability Disclosure

The act of making public and stakeholders aware of a company's operations that contribute to the social, economic, and environmental well-being of citizens is known as sustainability disclosure. Sustainability disclosure, according to Nobanee *et al.* (2016), is the public reports that organisations publish to provide internal and external stakeholders with knowledge of their positions and operations on economic, environmental, and social dimensions. Global Reporting Initiative (GRI), Carbon Disclosure Project (CDP), ESG Sustainability Guidelines, International Integrated Reporting Council (IIRC), Dow Jones Sustainability Index (DJSI), Global Initiative for Sustainability Ratings (GISR), and Sustainability Accounting Standards Board (SASB), among others, have developed frameworks and standards for sustainability disclosure (Ching *et al.*, 2017; Gold *et al.*, 2020). However, in Nigeria, following a stakeholder engagement meeting to discuss the benefits of sustainability practise to businesses, its performance on environmental, social, and governance (ESG) issues, and enhancing corporate transparency, the Nigerian Securities and Exchange Commission (SEC) approved the sustainability reporting guidelines in November 2018, which are expected to provide information on five key social and environmental sustainability areas: the community, the environment, the workplace, governance and employees (SEC, 2018).

Financial Performance

The financial performance indicators analysed in this study are explained here. Return on asset gauges a company's capacity to create profit from its assets. The ratio of an organization's profits to its total resources (assets) is denoted by ROA. The statement of comprehensive income includes net income, also known as profit after taxes (PAT). A high ROA implies that a company generates a considerable amount of profit for each asset it possesses, whereas a low ROA suggests that the organisation is inefficient in creating profit from its assets. Return on equity is a key indicator used by investors to assess a company's success by dividing net income by total equity. According to Jankalova *et al.* (2019), EVA is a measure for analysing a company's potential to sustain economic growth. The EVA technique is effective for assessing financial performance because it may describe a firm's genuine worth (Ende, 2017). A positive EVA indicates that a company has successfully created value for its shareholders by delivering returns that exceed the capital invested. A negative EVA, on the other hand, indicates that the company has not added value to its shareholders' capital. Tobin's Q is a market value financial measure determined by dividing market capitalization by total asset (Felix, 2021; Haidar *et al.*, 2021). If Tobin's Q is less than one, the company is undervalued. If Tobin's Q is more than one, the company is overvalued. A Tobin's Q of 1 implies that break even has occurred.

Theoretical Framework

The legitimacy theory, initially developed by John Dowling and Jeffrey Pfeffer in 1975 according to Guthrie *et al.* (2006), suggests that organizations operate based on an implicit contract with society. This theory posits that businesses should strive to comply with the laws and societal standards of their operating environment. The legitimacy of a business entity to conduct its activities in society is contingent upon this implicit contract, as explained by Gray *et al.* (1995). Violating societal norms and expectations can result in businesses losing their social acceptance and permission to operate, as highlighted by Faisal *et al.* (2012). Gold *et al.* (2020) emphasize that the legitimacy theory rests on the assumption that organizations must uphold social values, norms, and

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expectations in order to sustain their existence and growth in the long term. Disclosing economic, environmental, and social practices by businesses demonstrates that they have fulfilled their part of the implicit contract and adhered to societal values, as mentioned by Nobanee et al. (2016). This study recognizes the significance of the legitimacy theory in enabling corporate organizations to create a supportive business environment through sustainable practices and other strategic approaches. This theory has been adopted by researchers such as Faisal et al. (2012), Guthrie et al. (2006), Khan (2019), and Umeanozie et al. (2022).

Empirical Review

Buallay *et al.* (2021) investigated sustainability reporting and bank performance after financial crisis: evidence from developed and developing countries. The objective was to analyse the correlation between sustainability reporting and bank performance in both developed and developing countries following the financial crisis. The sample size was made up of 882 banks from developed and developing countries for a period of 11 years after the 2008 financial crisis. The study utilized environmental, social, and governance (ESG) scores as independent variables, while return on equity, return on asset, and Tobin's Q were considered as dependent variables. The analysis incorporated bank-specific and country-specific control variables to assess the connection between sustainability reporting and bank performance. The findings indicate that ESG factors have a greater impact on the accounting and market-based performance of banks in developed countries. These results align with the findings of Abughneim *et al.* (2019). However, the period is considered obsolete, and EVA was not measured as a financial indicator metric. This study closed this gap by analysing 2012-2021 and including EVA.

Sulbahri *et al.* (2021) examined the effect of sustainable report (CSR) on return on asset, return on equity and good corporate governance. The aim was to examine how sustainability report affects financial performance of banking companies in Indonesia. The financial performance indicators used to analyse the effect of sustainability report on banking companies are ROA and ROE. The method used in the research is quantitative research and descriptive analysis research. The study collected data through secondary sources from the annual financial statements of all banking companies published and listed on the Indonesian Stock Exchange (IDX) from 2016-2019. Sample size was determined through the following criterion: banking companies that published sustainability reports for 2016-2019, published financial reports for 4 consecutive years 2016-2019, and having complete information and data on good corporate governance. Panel regression model was used to analyse the data retrieved. The results of the study indicated that the sustainable report affects return on equity and the return on asset of the sustainable report variable. The result of the analysis is consistent with the findings of Umar *et al.* (2021). Despite the outcome of the study, only banking companies, ROA and ROE were examined, and the period 2016-2019 is considered insufficient; therefore, this study bridged this gap by analysing all listed financial companies, extending the period to 10 years from 2012-2021 and including EVA and Tobin's Q.

Yahaya *et al.* (2021) conducted a study focusing on the sustainability and profitability of insurance companies listed in Nigeria. The objective was to explore the relationship between sustainability performance and the profitability of these companies. The research utilized a correlational research design and included a population of 26 insurance companies. Due to the small population size, census sampling technique was employed, making use of all the companies as the sample. The study covered a period of 10 years, from 2010 to 2019. Data was collected from secondary sources, specifically the annual reports of the quoted insurance firms in Nigeria. Descriptive and inferential statistics were employed for data analysis. The analysis included diagnostic checks such as normal distribution, multicollinearity, heteroscedasticity, panel effect, and Hausman specification checks at a significance level of 0.05. The findings revealed that social sustainability had a positive and significant impact on return on equity (ROE) and return on assets (ROA), while environmental sustainability had a negative and significant effect on ROE and ROA. Economic sustainability, however, did not show any significant impact on ROE and ROA. These findings align with the results obtained by Tri *et al.* (2018); Gunarsih & Ismawati (2018). It is important to note that the study focused solely on listed insurance companies and the empirical analysis concluded in 2019. In contrast, this present study covers all listed financial companies from 2012 to 2021.

Ibrahim (2021) conducted a study examining the relationship between sustainability reporting and business growth in selected listed deposit money banks in Nigeria. The research utilized a quantitative approach and employed an ex-post facto research design. Secondary data from audited annual reports of the chosen listed deposit money institutions in Nigeria were collected for the period from 2014 to 2018. Content analysis was used to analyse the collected data, and a straightforward regression model was employed for data analysis. The results of the study indicate that sustainability reporting has a significant impact on the profitability of listed deposit money banks in Nigeria. Additionally, the study found an inverse relationship between sustainability reporting and asset growth in these banks, which aligns with the findings of Uwuigbe *et al.* (2018). It is worth

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noting that the study's time frame is limited to the years 2014-2018 and may not provide the most up-to-date information on the subject.

Buallay *et al.* (2019) conducted a comparative study to analyse the relationship between sustainability reporting and firm performance in the manufacturing and banking sectors. The study aimed to compare operational performance (ROA), financial performance (ROE), and market performance (Tobin's Q) by considering macroeconomic control variables. The research utilized a sample of 932 manufacturers and 530 banks across 80 countries, examining a period of 10 years from 2008 to 2017. Data was collected from secondary sources, specifically the Bloomberg database. Pooled data regression under the general linear model was employed to examine the relationship between sustainability reporting and firm performance. The overall analysis of environmental, social and governance (ESG) factors revealed a significant positive influence on performance. However, when examining the individual indicators, diverse outcomes were observed. Environmental disclosure demonstrated a positive impact on ROE and Tobin's Q, while social disclosure had a negative impact across all three performance models. Corporate governance disclosure was found to have a negative effect on financial and operational performance, as measured by ROA and ROE. These findings align with the conclusions drawn by Omaliko *et al.* (2020). It is important to note that the study did not assess EVA as a financial performance indicator, and the time frame of 2008-2017 may be considered out-dated. However, this present study addresses these gaps by including EVA as an indicator and extending the time frame to 2021.

Khan (2019) conducted a study to explore the impact of Corporate Sustainability Practices (CSP) on the financial performance of the top publicly listed commercial banks in Pakistan. The research focused on the annual reports of the top 10 commercial banks, considering their market capitalization. Data was collected through content analysis of the annual reports spanning a period of five years, from 2012 to 2016. The study utilized Random Effect (RE) and Fixed Effect (FE) models for analysis. The findings revealed that corporate sustainability practices have a positive and significant influence on a company's financial performance. Firm size and age were found to have no significant impact on financial performance, while leverage had a negative effect on return on assets (ROA), which aligns with the findings of Johari *et al.* (2019). It is important to note that this study focused solely on listed commercial banks, and the data analysis covered the years 2012 to 2016, which may be considered out-dated. However, the present study addresses these limitations by examining all listed financial companies from 2012 to 2021.

Uwuigbe *et al.* (2018) conducted a study titled sustainability reporting and firm performance: a bi-directional approach. The research focused on deposit money institutions listed on the Nigerian Stock Exchange, encompassing the entire population. A sample of 10 banks was selected using judgmental sampling. Data from the annual reports and sustainability reports of these institutions for the period of 2014-2016 were analysed through content analysis, resulting in the creation of a sustainability disclosure index. Panel regression was employed to analyse the data. The empirical findings revealed a reciprocal relationship between sustainability reporting and the corporate performance of the listed Deposit Money Banks (DMBs) in Nigeria. The study demonstrated that sustainability reporting had a significant positive impact on the income generation of the sampled companies, which aligns with the findings of Khan (2019). It is important to note that only deposit money banks were included as samples within the period of 2014-2016, which is considered limited. In contrast, the present study utilized a sample of 36 financial companies from 2012 to 2021, aiming to provide a more comprehensive analysis.

Buallay (2018) conducted a study to examine the association between sustainability reporting (ESG) and performance in the European banking sector. The objective was to investigate the correlation between ESG disclosure and market performance (Tobin's Q), financial performance (Return on Equity), and operational performance (Return on Assets) measures of banks. The study covered a period from 2007 to 2016 and included 235 banks listed on the stock exchanges of European Union countries. ESG disclosure was treated as the independent variable, while performance indicators (Tobin's Q, return on equity, and return on assets) were considered as dependent variables. The study incorporated two categories of control variables: bank-specific variables and macroeconomic variables. Secondary data was collected from the Bloomberg database. A linear regression model was used to evaluate the relationship between sustainability reporting and performance. The empirical findings revealed a significant positive effect of ESG on performance, which is consistent with the results of Omaliko *et al.* (2020). It is important to note that the study did not assess EVA as a financial performance indicator, and the time frame of 2007-2016 may be considered out-dated. However, the present study addresses these limitations by including EVA as an indicator and extending the time frame to 2021.

The study identified two gaps in prior research and literature. The first gap relates to the population under investigation. Upon reviewing earlier studies, it became evident that there is a lack of research focusing on listed financial companies in Nigeria in the context of sustainability disclosure. The selection of financial firms as the target population is justified by their role in providing funds to other industries. Most studies were limited to specific sectors – deposit money banks (Ogungbade, 2021; Uwuigbe *et al.*, 2018), industrial/consumer goods firms (Felix, 2021; Umar *et al.*, 2021), insurance firms (Yahaya *et al.*, 2021),

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manufacturing firms (Abba *et al.*, 2017), oil and gas companies (Emmanuel *et al.*, 2022); but very few research has been conducted on all financial firms listed in Nigerian.

Furthermore, a gap in knowledge has been identified through an examination of the existing literature. Specifically, there is a need to explore the impact of sustainability disclosure on the economic value added (EVA) of listed companies, particularly in relation to financial performance. It is hypothesized that when companies generate higher profits, additional wealth is created for investors, and projects yield returns that exceed the cost of capital. Previous empirical studies have predominantly focused on indicators such as Tobin's Q (Gunarsih *et al.*, 2018; Iredele *et al.*, 2018; Memed *et al.*, 2021; Oyedokun *et al.*, 2019; Swarnapali *et al.*, 2018), return on equity (Asuquo *et al.*, 2018; Gunarsih *et al.*, 2018; Hamid *et al.*, 2020; Khan, 2019; Sanusi *et al.*, 2019; Umar *et al.*, 2021; Yahaya *et al.*, 2021), and return on assets (Johari *et al.*, 2019; Nnamani *et al.*, 2017; Polycarp, 2019; Umar *et al.*, 2021; Yahaya *et al.*, 2021). Little research has been done on Economic Value Added (EVA).

3 DATA AND METHODS

This study employed an ex-post facto and longitudinal research design as it involved extracting raw data from annual reports, including financial statements and sustainability reports, without making any alterations. Multiple firms were examined over a period of 10 years. The data for the study were obtained from secondary sources. Alongside the annual reports and sustainability reports of the listed companies, data were retrieved from the Nigerian Exchange Group database. The annual reports and sustainability reports were collected from the official websites of the companies, covering the period from 2012 to 2021. The measurement of sustainability practices adhered to the guidelines provided by the Global Reporting Initiative (GRI) and ESG disclosure guidelines, which can be accessed at www.globalreporting.org, the official GRI website. The population of the study comprised all 49 financial companies (including banks, insurance, microfinance, and mortgage firms) listed on the Nigerian Exchange Group (NGX) as of May 29, 2023. Purposive sampling technique was employed to select a sample of 36 financial firms. The study utilized panel regression analysis, specifically pooled OLS, fixed effects model, and random effects model.

Model Specification

The models for ROA, ROE, EVA, and Tobin's Q were adapted from the research of Khan (2019), Subedi & Farazmand (2020) and Gunarsih *et al.* (2018) because of the similarities and recency. The adaptation was achieved by removal and inclusion of some variables; therefore, the models for this study are stated mathematically as follows:

$$ROA_{it} = \beta_0 + \beta_1ESDI_{it} + \beta_2SDI_{it} + \beta_3EDI_{it} + \beta_4GDI_{it} + \epsilon_{it}$$

$$ROE_{it} = \beta_0 + \beta_1ESDI_{it} + \beta_2SDI_{it} + \beta_3EDI_{it} + \beta_4GDI_{it} + \epsilon_{it}$$

$$EVA_{it} = \beta_0 + \beta_1ESDI_{it} + \beta_2SDI_{it} + \beta_3EDI_{it} + \beta_4GDI_{it} + \epsilon_{it}$$

$$TQ_{it} = \beta_0 + \beta_1ESDI_{it} + \beta_2SDI_{it} + \beta_3EDI_{it} + \beta_4GDI_{it} + \epsilon_{it}$$

Where:

ESDI = ESG sustainability disclosure index

SDI = Social sustainability disclosure index

EDI = Environmental sustainability disclosure index

GDI = Governance sustainability disclosure index

$\beta_1 - \beta_4$ = Independent variables coefficient

i = firm (1-36)

t = period (2012-2021)

μ = error term

A-priori expectation = $\beta_1 - \beta_4 > 0$

4 DATA ANALYSIS AND INTERPRETATION OF RESULT

Descriptive Statistics

Table 2, as shown in the appendix, the basic features of the data used for the analysis. The total number of observations is 360. From the table, the overall average of returns on asset (ROA) of financial companies is 1.420778 with minimum of -54.99 and maximum ROA of 20.76. The standard deviation of 6.164119 indicates that small spread around the average ROA value. The overall average on returns on equity of financial companies is 9.865361 with minimum ROE of -394.32 and maximum ROE of 1222.87. The value of the standard deviation of 71.71418 further shows wide variation around the average ROE value. Also, the overall average economic value added (EVA) of financial companies (0.0000833) indicates that financial companies have very little economic value with minimum of -0.96 and maximum of 0.16. The standard deviation of 0.0851134 shows small variation around the average value. Furthermore, overall average Tobin Q ratio (TQ) ratio of 0.6585556 indicates that it will cost financial

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companies more to replace their assets than what they are worth with minimum and maximum of 0 and 2.61 respectively. The standard deviation of 0.3974215 shows small spread around the average TQ ratio. The overall average ESG sustainability disclosure index (ESDI) is 55.17225 with minimum and maximum liquidity of 0 and 85.94 respectively. A standard deviation of 21.34723 indicates medium spread around the average value. Also, the overall average of social sustainability disclosure index (SDI) is 63.88769 with minimum and maximum SDI of 0 and 100 respectively. A standard deviation of 25.68661 indicates medium spread around the average value. Furthermore, the overall average value of environmental sustainability disclosure index (EDI) is 37.39583 with minimum EDI of 0 and maximum EDI of 87.5. The standard deviation of 20.83075 further shows a medium spread from the average value. Lastly, the overall average of governance sustainability disclosure index (GDI) is 64.23245 with minimum and maximum cost of 0 and 100 respectively. The standard deviation of 24.26567 indicates a medium spread around the average value.

The effect of sustainability disclosure on return on asset of listed financial companies in Nigeria

The within r-square of this model is 0.0135, with between r-square of 0.0489 and overall r-square of this model is 0.0277. The result of the Wald chi2 (6.09) shows that the model is significant with a probability value of 0.0023. Also, the values of the z-score shows that ESGI is negative and lies below the mean, while SDI, EDI, and GDI are positive and lie above the mean. The regression result shows that ESGI, SDI and EDI are positive and significant while GDI is positive and insignificant. Therefore, an increase in ESG sustainability disclosure index (ESGI) increases the returns of asset (ROA) of listed financial companies by 98.812units. Similarly, an increase in social sustainability disclosure index (SDI) increases the returns on asset of listed financial companies by 32.043 units. Lastly, an increase in environmental sustainability disclosure index (EDI) increases the returns on asset of listed financial companies by 32.937 units. In conclusion, components of corporate sustainability practices such as ESGI, SDI, and EDI have significant effect on returns on asset of listed financial companies in Nigeria.

Table 1: Effect of sustainability disclosure on return on asset of listed financial companies in Nigeria

ROA	Coefficient	Standard Error	Z	P> z
ESGI	98.81195	-1.01	-1.01	0.014
SDI	32.94338	1.01	1.01	0.013
EDI	32.93694	1.01	1.01	0.014
GDI	32.93153	1.01	1.01	0.314
_CONS	1.506254	-0.4	-0.4	0.091
R-SQUARE	Within 0.0135 Between 0.0489 Overall 0.0277			
WALD CHI ²	6.09	0.0023)		

Source: Computed by the Author (STATA, 16)

Evaluate the effect of sustainability disclosure on return on equity of listed financial companies in Nigeria

The within r-square of this model is 0.0077, with between r-square of 0.0583 and overall r-square of this model is 0.0117. The result of the Wald chi2 (4.21) shows that the model is significant with a probability value of 0.0378. Also, the values of the z-score shows that ESGI is negative and lies below the mean, while SDI, EDI, and GDI are positive and lie above the mean. The regression result shows that GDI, SDI and EDI are positive significant while ESGI is negative insignificant. Therefore, an increase in social sustainability disclosure index (SDI) increases the returns on equity of listed financial companies by 248.68 units. Similarly, an increase in environmental sustainability disclosure index (EDI) increases the returns on equity of listed financial companies by 247.89 units. Finally, an increase in governance sustainability disclosure index (GDI) increases the returns of equity of listed financial companies by 248.35 units. In conclusion, components of corporate sustainability practices such as SDI, EDI, and GDI have significant effect on returns on equity of listed financial companies in Nigeria.

Table 2: Effect of sustainability disclosure on return on equity of listed financial companies in Nigeria

ROE	Coefficient	Standard Error	Z	P> z
ESGI	-744.965	1222.247	-0.61	0.524
SDI	248.6763	407.5166	0.61	0.042
EDI	247.8909	407.4055	0.61	0.043

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GDI	248.3508	407.3321	0.61	0.042
_CONS	1.629026	10.87793	0.15	0.001
R-SQUARE	Within 0.0077			
	Between 0.0583			
	Overall 0.0117			
WALD CHI ²	4.21	0.0378)		

Source: Computed by the Author (STATA, 16)

Investigate the effect of sustainability disclosure on Tobin's Q of listed financial companies in Nigeria

The within r-square of this model is 0.0527, with between r-square of 0.3413 and overall r-square of this model is 0.2451. The result of the Wald chi2 (30.58) shows that the model is significant with a probability value of 0.0000. Also, the values of the z-score shows that ESGI is positive and lies above the mean, while SDI, EDI, and GDI are negative and lie below the mean. The regression result shows that GDI, SDI and EDI are negative significant while ESGI is positive significant. Therefore, an increase in ESG sustainability disclosure index (ESGI) increases Tobin's Q of listed financial companies by 3.207 units. Also, an increase in social sustainability disclosure index (SDI) decreases Tobin's Q of listed financial companies by 1.071 units. Similarly, an increase in environmental sustainability disclosure index (EDI) decreases Tobin's Q of listed financial companies by 1.069 units. Finally, an increase in governance sustainability disclosure index (GDI) decreases Tobin's Q of listed financial companies by 1.062 units. In conclusion, corporate sustainability practices have significant effect on Tobin's Q of listed financial companies in Nigeria.

Table 3: Effect of sustainability disclosure on Tobin's Q of listed financial companies in Nigeria

TQ	Coefficient	Standard Error	Z	P> z
ESGI	3.207083	4.298961	0.75	0.046
SDI	-1.07103	1.433217	-0.75	0.015
EDI	-1.06936	1.432974	-0.75	0.006
GDI	-1.06238	1.43274	-0.74	0.038
_CONS	0.371074	0.083834	4.43	0.000
R-SQUARE	Within 0.0527			
	Between 0.3413			
	Overall 0.2451			
WALD CHI ²	30.58	(0.0000)		

Source: Computed by the Author (STATA, 16)

Assess the effect of sustainability disclosure on economic value added of listed financial companies in Nigeria

The within r-square of this model is 0.0037, with between r-square of 0.0383 and overall r-square of this model is 0.0149. The result of the Wald chi2 (2.07) shows that the model is significant with a probability value of 0.0227. Also, the values of the z-score shows that ESGI is negative and lies below the mean, while SDI, EDI, and GDI are positive and lie above the mean. The regression result shows that GDI, SDI and EDI are positive significant while ESGI is negative significant. Therefore, an increase in ESG sustainability disclosure index (ESGI) decreases the economic value added of listed financial companies by 1.019 units. Also, an increase in social sustainability disclosure index (SDI) increases the economic value added of listed financial companies by 0.340 units. Similarly, an increase in environmental sustainability disclosure index (EDI) increases the economic value added of listed financial companies by 0.340 units. Lastly, an increase in governance sustainability disclosure index (GDI) increases the economic value added of listed financial companies by 0.340 units. In conclusion, corporate sustainability practices have significant effect on the economic value added of listed financial companies in Nigeria.

Table 4: Effect of sustainability disclosure on economic value added of listed financial companies in Nigeria

EVA	Coefficient	Standard Error	Z	P> z
ESGI	-1.01948	1.363576	-0.75	0.045
SDI	0.340327	0.454608	0.75	0.014
EDI	0.339625	0.45452	0.75	0.005
GDI	0.339472	0.454446	0.75	0.015
_CONS	-0.00144	0.021034	-0.07	0.045

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R-SQUARE	Within 0.0037 Between 0.0383 Overall 0.0149
WALD CHI ²	2.07 (0.0227)

Source: Computed by the Author (STATA, 16)

Discussion of Findings

The analysis revealed that governance, social and environmental disclosure indexes have positive and significant while ESG disclosure index is negative and insignificant on return on asset of the listed financial companies in Nigeria. Based on the result of the finding, it is therefore concluded that sustainability disclosure has a significant effect on the return on assets of companies listed in Nigeria. Hence, the null hypothesis which states that sustainability disclosure has no significant effect on the return on asset of companies listed in Nigeria is rejected. This result is consistent with the findings of Buallay (2018), Buallay *et al.* (2021), Khan (2019), Sulbahri *et al.* (2021), Yahaya *et al.* (2021).

The analysis also showed that the effect of ESG disclosure index on return on equity is negative and insignificant while social, environmental, and governance has positive and significant effect on return on equity. Hence, the null hypothesis which states that sustainability disclosure has no significant effect on the return on asset of companies listed in Nigeria is rejected. The outcome is consistent with those of Buallay (2018), Buallay *et al.* (2021), Sulbahri *et al.* (2021), Yahaya *et al.* (2021).

The analysis revealed that ESG disclosure has positive and significant effect on Tobin's Q while social, environmental, and governance disclosures have negative and significant effects on Tobin's Q of listed financial companies in Nigeria. Hence, the null hypothesis which states that sustainability disclosure has no significant effect on the Tobin's Q of listed financial companies in Nigeria is rejected. The findings from this research align with those of Buallay *et al.* (2021).

The analysis disclosed that ESG disclosure has negative and significant effect on economic value added of listed financial companies in Nigeria while governance, social and environmental disclosures have positive and significant effect on economic value added of listed financial companies in Nigeria. Hence, the null hypothesis which states that sustainability disclosure has no significant effect on the economic value added of listed financial companies in Nigeria is rejected. The results of this research are consistent with those of Ndubuisi *et al.* (2018); Okoye *et al.* (2020). On the contrary, the result of Tanjung *et al.* (2019); Umeanozie *et al.* (2022) contradicts the result of the findings.

5 CONCLUSION AND RECOMMENDATIONS

The study investigated the effect of sustainability disclosure on the financial performance of listed financial companies in Nigeria. The focus of the study was sustainability disclosure indexes (ESG disclosure index, social disclosure index, environmental disclosure index and governance disclosure index) and financial performance indicators (return on equity, return on asset, Tobin's Q, and economic value added) for a period of 10 years (2012-2021). The result of the analysis indicate that sustainability disclosure has a significant impact on the return on assets (ROA), economic value added (EVA), return on equity (ROE), and Tobin's Q of listed financial companies in Nigeria.

The study therefore recommends that all listed financial companies in Nigeria should be mandated to comply with the sustainability reporting guidelines in order to enhance financial performance, environmental, social and governance wellbeing of stakeholders.

REFERENCES

- 1) Abughneim, M. S., Al-Aishat, M. H., & Hamdan, A. M. (2019). Corporate Sustainability as an Antecedent to the Financial Performance: An Empirical Study. *Polish Journal of Management Studies*, 20(2), 35-44.
- 2) Adobe Inc. (2023, May 4). *Why Sustainability in Business is Important*. <https://www.adobe.com/acrobat/hub/resources/why-sustainability-in-business-important.html>
- 3) Asuquo, A. I., Dada, E. T., & Onyeogaziri, U. R. (2018). The Effect of Sustainability Reporting on Corporate Performance of Selected Quoted Brewery Firms in Nigeria. *International Journal of Business and Law Research*, 6(3), 1-10.
- 4) Bella, N. R., & Tarsisus, R. S. (2018). The Competitive Advantage between Intellectual Capital and Financial Performance of Banking Sector in ASEAN. *Jurnal Keuangan dan Perbankan*, 22(2), 321-334.
- 5) Buallay, A. (2018). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*, 30(1), 98-115.
- 6) Buallay, A., Hamdan, A., & Barone, E. (2019). Sustainability Reporting and Firm's Performance: Comparative Study between Manufacturing and Banking Sectors. *International Journal of Productivity and Performance Management*, 3(5), 1-16.

Corporate Sustainability Practices and the Financial Performance of Listed Financial Companies in Nigeria

- 7) Buallay, A., Fadel, S.M., Alajmi, J., & Saudagaran, S. (2021). Sustainability reporting and bank performance after financial crisis: Evidence from developed and developing countries. *Competitiveness Review*, 31(4), 747-770.
- 8) Ching, H. Y., Gerab, F., & Toste, T. H. (2017). The Quality of Sustainability Reports and Corporate Financial Performance: Evidence from Brazilian Listed Companies. *Sage Open*, 1-9.
- 9) Emmanuel, O. G., & Erinoso, O. M. (2022). Environmental Conservation, Sustainability, and Financial Performance of Listed Oil and Gas Companies in Nigeria. *International Journal of Research and Innovation in Social Science*, VI(VIII), 582-590.
- 10) Ende, E. (2017). Financial Performance using Economic Value Added (EVA). *IOP Conference Series: Materials Science and Engineering*, 180(9), 1-9. <https://10.1088/1757-899X/180/1/012250>.
- 11) Faisal, F., Tower, G., & Rusmin, R. (2012). Legitimizing Corporate Sustainability Reporting throughout the World. *Australasian Accounting Business and Finance Journal*, 6(2), 19-34.
- 12) Felix, I. E. (2021). Corporate Sustainability Disclosure and the Nigerian Industrial/Consumer Goods Sector's Performance: A Panel Data Approach. *International Journal of Research and Innovation in Social Science*, V(III), 622-627.
- 13) Gold, N. O., & Taib, F. M. (2020). Impact of Corporate Sustainability Reporting Practice on Corporate Performance: A Review of Literature. *International Journal of Industrial Management*, 8(1), 19-34.
- 14) Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate Social and Environmental Reporting: A Review and a Longitudinal Study of UK Disclosure. *Accounting, Auditing & Accountability Journal*, 8(4), 47-77.
- 15) Gunarsih, T., & Ismawati, Y. (2018). Sustainability Report and Firm Performance: Study in Mining and Metal and Food Processing Industry Indonesia Stock Exchange 2014-2017. *Journal of Governance and Integrity*, 2(1), 9-26.
- 16) Guthrie, J., Cuganesan, S., & Ward, L. (2006). Legitimacy Theory: A Story of Reporting Social and Environmental Matters within the Australian Food and Beverage Industry. *Social Science Research Network*, 1-35. <http://ssrn.com/abstract=1360518>.
- 17) Haidar, M. H., & Sohail, R. M. (2021). Sustainability Reporting (SR) Disclosure and Value Relevance on Listed Saudi Firms. *Open Journal of Business and Management*, 9(4), 1782-1804. <https://doi.org/10.4236/ojbm.2021.94097>.
- 18) Hamid, K. T., & Ibrahim, M. (2020). The moderating effect of corporate governance on the relationship between corporate social responsibility and financial performance of listed non-financial services companies in Nigeria. *International Journal of Accounting and Finance (IJAF)*, 9(1), 69-89.
- 19) Ibrahim, A. U., & Mustapha, A. M. (2019). Impact of financial control mechanisms on profitability performance: A case of manufacturing firms in Nigeria. *International Journal of Managerial Studies and Research*, 7(3), 1-10. <https://doi.org/10.20431/2349-0349.0703001>.
- 20) Ikram, M., Zhang, Q., Sroufe, R., & Ferasso, M. (2020). The Social Dimensions of Corporate Sustainability: An Integrative Framework Including COVID-19 Insights. *Sustainability*, 12(8747), 1-29. <http://dx.doi.org/10.3390/su12208747>.
- 21) Iredele, O. O., & Okpala, O. P. (2018). Corporate social and environmental disclosures and market value of listed firms in Nigeria. *Copernican Journal of Finance & Accounting*, 7(3), 9-28.
- 22) Jankalova, M., & Kurotova, J. (2019). Sustainability Assessment using Economic Value Added. *Sustainability*, 12(318), 1-19.
- 23) Johari, J., & Komathy, I. (2019). Sustainability Reporting and Firm Performance: Evidence in Malaysia. *International Journal of Accounting, Finance and Business*, 4(17), 1-7.
- 24) Khan, M. (2019). Corporate Sustainability Practices Impact on Firm Financial Performance: Evidence from the Banking Sector of Pakistan. *City University Research Journal*, 9(2), 427-438.
- 25) Memed, S., & Amir, M. (2020). The Effect of Sustainability Reporting on Company Financial Performance of Mining Sector Company in Indonesia. *International Journal of Advanced Science and Technology*, 29(8), 546-555.
- 26) Ndubuisi, A. N., Vincent, O. P., & Chinyere, O. J. (2018). Effect of Sustainability Reporting on Economic Value Added of Quoted Brewery Firms in Nigeria. *Social Science Research Network*, 61-78. <https://ssrn.com/abstract=3704483>.
- 27) Nnamani, J. N., Onyekwelu, U. I., & Ugwu, O. K. (2017). Effect of Sustainability Reporting on Corporate Performance of Firms in the Nigerian Brewery Sector. *European Journal of Business and Innovation Research*, 5(1), 1-15.
- 28) Nobanee, H., & Ellili, N. O. (2016). Corporate Sustainability Disclosure in Annual Reports: Evidence from UAE Banks: Islamic versus Conventional. *Renewable & Sustainable Energy Reviews*, 55(2), 1336-1341.
- 29) Omaliko, E., Nweze, A., & Nwadiolor, E. (2020). Effect of Social and Environmental Disclosures on Performance of Non-Financial Firms in Nigeria. *Journal of Accounting and Management*, 2(2), 23-30.
- 30) Oyedokun, G. E., Egberi, O. E., Tonade, M. A. (2019). Environmental accounting disclosure and firm value of industrial goods companies in Nigeria. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 10(1), 7-27.

Corporate Sustainability Practices and the Financial Performance of Listed Financial Companies in Nigeria

- 31) Polycarp, S. U. (2019). Environmental Accounting and Financial Performance of Oil and Gas Companies in Nigeria. *Research Journal of Finance and Accounting*, 10(10), 192-202.
- 32) Sanusi, K. A., & Sanusi, O. O. (2019). Environmental Sustainability Reporting Practices in Nigeria: Are Clouds Darker or Fairer in the Manufacturing Industry? *International Journal of Social Sciences and Humanity Studies*, 11(2), 39-60.
- 33) Securities and Exchange Commission. (2018). Sustainability reporting guidelines. [1530_Nigeria_Sustainability_Disclosure_Guidelines_2019_NSE.pdf \(sbfnetwork.org\)](#)
- 34) Subedi, M., & Farazmand, A. (2020). Economic Value Added (EVA) for Performance Evaluation of Public Organizations. *Public Organization Review*, 20(5), 613-630. <https://doi.org/10.1007/s11115-020-00493-2>.
- 35) Swarnapali, R. M., & Le, I. (2018). Corporate Sustainability Reporting and Firm Value: Evidence from a Developing Country. *The International Journal of Organizational Innovation*, 10(4), 69-78.
- 36) Tanjung, P. R., & Wahyudi, S. M. (2019). Analysis of the Effect Disclosure of Sustainability Report, Economic Value Added and other Fundamental Factors of Companies on Company Value. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 9(2), 237-249. <http://dx.doi.org/10.6007/IJARAFMS/v9-i2/6171>.
- 37) Umar, M. M, Mustapha, L. O., & Yahaya, O. A. (2021). Sustainability Reporting and Financial Performance of Listed Consumer Goods Firms in Nigeria. *Journal of Advance Research in Business Management and Accounting*, 7(3), 21-32.
- 38) Umeanozie, O., & Ofoegbu, G. (2022). Disclosure of Sustainability Reporting and Their Effect on Shareholders Wealth Maximization of Listed Nigerian Companies. *Academy of Accounting and Financial Studies Journal*, 26(5), 1-12.
- 39) Uwuigbe, U., Teddy, O., Uwuigbe, O., Emmanuel, O., Asiriuwa, O., Eyitomi, G. A., & Taiwo, O. S. (2018). Sustainability Reporting and Firm Performance: A Bi-Directional Approach. *Academy of Strategic Management Journal*, 17(3), 2018.
- 40) Yahaya, O. A., & Akasim, A. (2021). Sustainability and Profitability of Listed Insurance Companies. *International Journal of Innovative Research in Accounting and Sustainability*, 6(1), 17-28.

APPENDIX

Measurement of Variables

Table 1: Variables and Measurement

S/N	Variable	Role	Measurement	Source
1	Financial Performance – Dependent			
1a	Return on asset	Dependent	Measured as net income divided by total asset (%)	Bella <i>et al.</i> (2018);
1b	Return on equity	Dependent	Measured as net income divided by total equity (%)	Khan (2019)
1c	Economic value added	Dependent	Measured as net operating profit after tax minus (weighted average cost of capital*capital employed) scaled by total asset (x)	Subedi <i>et al.</i> (2020)
1d	Tobin's Q	Dependent	Measured as market capitalization divided by total asset	Gunarsih <i>et al.</i> (2018)
2	Sustainability Disclosure – Independent			
2a	ESG sustainability disclosure index	Independent	Measured as the average of the social, environmental and governance sustainability indexes (%) in line with ESG sustainability guidelines	Annual report
2b	Social sustainability disclosure index	Independent	Measured as the average of all the social disclosure items in line with GRI sustainability guidelines (%)	Annual report
2c	Environmental sustainability disclosure index	Independent	Measured as the average of all the environmental disclosure items (%) in line with GRI sustainability guidelines (%)	Annual report
2d	Governance	Independent	Measured as the average of all the	Annual report

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sustainability disclosure index

corporate governance disclosure items (%) in line with GRI sustainability guidelines (%)

Source: Author's Computation 2023

Table 2: Summary Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
ROA	Overall	1.420778	6.164119	-54.99	20.76	N = 360
	between		3.970205	-16.361	10.304	n = 36
	Within		4.756994	-37.20822	20.93178	T = 10
ROE	Overall	9.865361	71.71418	-394.32	1222.87	N = 360
	between		20.95331	-33.372	112.656	n = 36
	Within		68.66505	-351.0826	1120.079	T = 10
EVA	Overall	0.0000833	0.0851134	-0.96	0.16	N = 360
	between		0.0553969	-0.3	0.067	n = 36
	Within		0.0652104	-0.6599166	0.3300833	T = 10
TQ	Overall	0.6585556	0.3974215	0	2.61	N = 360
	between		0.3453317	0.013	1.745	n = 36
	Within		0.2041557	-0.1964444	1.850556	T = 10
ESGI	Overall	55.17225	21.34723	0	85.94	N = 360
	between		20.05719	0	75.155	n = 36
	Within		7.968599	7.572251	85.70425	T = 10
SDI	Overall	63.88769	25.68661	0	100	N = 360
	between		24.01262	0	95.714	n = 36
	Within		9.881861	12.46169	96.74569	T = 10
EDI	Overall	37.39583	20.83075	0	87.5	N = 360
	between		17.92438	0	72.5	n = 36
	Within		10.98595	-7.604167	79.89583	T = 10
GDI	Overall	64.23245	24.26567	0	100	N = 360
	between		22.32665	0	83.08	n = 36
	Within		10.141	5.001445	108.8124	T = 10



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Effectiveness of the Mini Note Use on Mother Pain Perception in Facing Labor Pain in South Tangerang Region Indonesia



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ABSTRACT: Labor pain is a physiological process, but it can cause frustration and despair, so that some mothers worry that they will not be able to get through the labor process. Mini Note was designed as a mini guide book that help expectant mothers to understand pain during labor. This study aimed to determine the effectiveness of the Mini Note use for management of labor pain against maternal pain perception in dealing with labor pain. Methods: This quasi-experimental study was conducted from September to November 2022. Respondents were third trimester pregnant women with a total of 60 respondents which were divided into 2 groups namely intervention and control group and consisted of 30 participants in each group. The study compared mothers' pain perception between the two groups before and after the intervention. A demographic questionnaire and the Visual Analog Scale were used to collect data. This study used cross-tabulation and chi-square to analyze demographic information. Independent samples t-test and multivariate linear regression were used to determine the relationship between the intervention carried out and mothers' pain perception in facing labor pain, the relationship between parity and pain perception in the face of labor pain, the relationship between the weight of the fetus and pain perception in facing labor pain, as well as multivariate linear regression in order to analyze the most associated factors with labor pain. Results: The most influential factor on maternal pain perception in dealing with labor pain was the use of mini note, after being controlled with parity variables, baby's weight, mother's knowledge and age. Conclusion: The use of Mini Note was effective to increase maternal pain perception in dealing with labor pain.

KEYWORDS: Mini Note, Labor Pain, Mother Pain Perception

I. INTRODUCTION

Childbirth is a process of dispensing the results of conception, which begins with the presence of contractions in the myometrium characterized by the presence of progressive changes in the cervix and ends with the birth of the placenta. During the first stage of labor, the presence of uterus contractions, lower uterine segment distention and cervix dilation causes pain (1). Labor pain is a physiological process, but it can cause frustration and despair, so that some mothers worry that they will not be able to get through the labor process. Globally, the prevalence of anxiety during pregnancy was 14–54% (2).

Most women will experience pain during labor. Each individual will perception a different pain towards the same stimulus depending on the pain threshold he has (3). Labor pain can stimulate the release of chemical mediators such as prostaglandins, leukotrienes, thromboxane, histamine, bradykinin, substance P, and seroquinin, will result in stress that gives rise to the secretion of hormones such as catecholamines and steroids with consequences vasoconstriction of blood vessels so that intestinal contractions weaken (4).

The sensations of pain that accompany uterine contractions affect the physiological mechanisms of a number of body systems that always cause a general and thorough response of the body. At the first stage of labor, pain is felt as radiation that crosses the uterus from the fundus area to the back. Although with different level, everyone has experienced the pain, but the reactions are different, some can bear it and some continue to whimper. A mother who is facing childbirth tends to feel fear. Specifically, women who do not have previous experience (nulliparous) have less confidence for physiologic birth than parous women (5).

Labor pain can also cause the onset of hyperventilation so that it can increase the need for oxygen and blood pressure, as well as reduce intestinal motility and urinary vesicles. This situation will stimulate an increase in catecholamines that can cause disturbances in the strength of uterine contractions so that uterine inertia occurs. If the labor pain is not overcome, it will increase catecholamine level and cause a long labor which is one of an indication of cesarean section (6–8). The high rate of

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cesarean section is caused by mothers' preference of relatively painless labor and childbirth. As much as 96.5% of the most dominant nonmedical determinants of maternity mothers requesting delivery cesarean section caused by pain during labor and childbirth (9). The increase of catecholamine level leads to anxiety and fear. This makes labor progress disrupted and contractions more painful (10). The labor progress failure then cause women to prefer caesarean section (11).

Even though many women view labor process a painful experience, it can be a joyful and memorable moment if accompanied with support and care (12). Therefore, presenting good environment and social support is important to create happiness and relieve labor pain. Various efforts were made to reduce pain in childbirth, both pharmacologically and non-pharmacologically. Pharmacological pain management is more effective than nonpharmacological methods but pharmacological methods are more expensive, and have the potential to have adverse side effects. Meanwhile, non-pharmacology methods are cheap, simple, effective, and without adverse effects. For these reasons, many expectant mothers would prefer to avoid this method and choose nonpharmacological approaches (13). Nonpharmacological methods can also increase satisfaction during childbirth because the mother can control her feelings and her strength (14).

Mini Note is a mini guide book that help expectant mothers to understand that pain during labor is a physiological process, to learn about techniques to relieve labor pain, and to deal with pain that may be experienced during the labor process. It contains materials related to labor pain, including the physiological process of labor pain, the factors associated, as well as labor pain reliefs both pharmacologically and non-pharmacologically. However, in the Mini Note, it emphasizes about non-pharmacological techniques for pain relief and how to deal with labor pain by expressing feelings about the perception of the labor process in the end pages of the Mini Note. Thus, this study purposed to determine the effectiveness of the Mini Note use for management of labor pain against maternal pain perception in dealing with labor pain.

II. METHODS

This was a quasi-experiment study that compared two groups of pregnant women: a group participating in education class using the Mini Note and a control group not participating in education class without using the Mini Note. Data was collected in South Tangerang Region in Indonesia from September to November 2019 after obtained an ethical approval from the Ethical Committee of Health Polytechnic of Health Ministry Jakarta I in Jakarta, Indonesia (Ref. No. 157/KEPK/VIII/2019).

The study used purposive sampling to recruit pregnant women who met the inclusion criteria: were in the third trimester (28 to 42 weeks of gestation) in South Tangerang area and able to participate as respondents in this study. Pregnant women with a history of cesarean section and high-risk pregnancy (severe pre-eclampsia, placenta previa, HIV/AIDS) so that they were not possible to give birth vaginally were excluded from this study. The researcher used Lemeshow calculation to estimate the required sample size. The final sample of this study thus consisted of 60 respondents, with 30 pregnant women in each group.

The independent variables of this study were giving Mini Note through health education, parity, and fetus weight, while the dependent variables were maternal pain perception in facing labor pain and mothers' knowledge about labor pain. This study used demographic questionnaire, Visual Analog Scale to measure maternal pain perception or perception in facing labor pain and a questionnaire was used to measure mothers' level in understanding labor pain.

Statistical Analysis: This study used SPSS version 20 to analyze the data. Data were analyzed using univariate analysis to look over the variable frequency distribution, bivariate analysis using t-test to investigate the relationship between the intervention carried out and mothers' pain perception in facing labor pain, the relationship between parity and pain perception in the face of labor pain, the relationship between the weight of the fetus and pain perception in facing labor pain, as well as multivariate linear regression in order to analyze the most associated factors with labor pain.

III. RESULTS

There were 60 participants involved in this study. According to Table 1, it can be found that mothers in the intervention group had 20 (80%) pain perception to face childbirth while in the control group there were 8 (27.7%). From the table, it is found that the number of intervention groups amounted to 30 people and the control group amounted to 30 people. It can be seen in Table 1 that most of respondents in the intervention group were 16 people (53.3%) and 18 people (60.0%) in the control group. Respondents who had 1 child in the intervention group were 22 people (73.3%) and 11 people (36.7%) in the control group. The body weight of babies born in the control group was 23 (33.3%) who weighed less than 3500 grams and 18 (60.0%) in the control group. Mothers who had good knowledge in the intervention group were 23 (76.7%) and 7 (30%) in the control group.

In Table 2, the result showed that in maternal pain perception variable, p-value of 0.04 was obtained, which means that there was a significant difference of maternal pain perception in facing labor pain between intervention and control groups. There was no difference in maternal age and baby weights between the two groups. Based on the age of the mothers, the result

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was obtained that there was no difference in the maternal pain perception to face labor pain. P-value of 0.082 in the infant weight variable showed that there was no significant difference of the mothers' pain perception to face childbirth between groups. Importantly, the mothers' knowledge differed significantly on the mother's pain perception in facing labor and childbirth.

Table 1. Univariate Analysis

No	Variable	Intervention Group		Control Group	
		N	%	N	%
1	Mother Pain perception				
	Less	6	20.0%	22	73.3%
	More	20	80.0%	8	27.7%
	Total	30	100.0%	30	100.0%
2	Maternal Age				
	< 35 years old	16	53.3%	18	60.0%
	>35 years old	14	46.7%	12	40.0%
	Total	30	100.0%	30	100.0%
3	Parity				
	1	22	73.3%	11	36.7%
	>1	8	26.7%	19	63.3%
	Total	30	100.0%	30	100.0%
4	Infant Weight				
	≤ 3500 grams	25	33.3%	18	60.0%
	≥ 3500 grams	5	66.7%	12	40.0%
	Total	30	100.0%	30	100.0%
5	Mothers' Knowledge Level				
	Less	7	23.3%	21	70.0%
	Good	23	76.7%	7	30.0%
	Total	30	100.0%	30	100.0%

Table 2. Result of Bivariate Analysis

Variable	Mean	Standard Deviation	P-Value
Maternal Pain perception			
Intervention group	1.67	0.479	.04
Control group	1.30	0.465	
Maternal Age			
≤35 years old	1.47	0.507	.10
> 35 years old	1.40	0.498	
Parity			
1	1.27	0.450	.04
>1	1.63	0.490	
Infant Weight			
<3500 grams	1.17	0.379	.82
>3500 grams	1.37	0.490	
Knowledge			
Intervention group	1.77	0.430	.00
Control group	1.30	0.466	

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From the first model of multivariate result (Table 3), it can be seen that the model has a p-value of < 0.05 , namely the intervention and parity. While the infant weight, maternal knowledge, and maternal age have a p-value of > 0.05 so that these variables were excluded from multivariate model in the next stage. In the final model of the multivariate result, variable of Intervention has a p-value < 0.05 , after being controlled with the Parity variable.

Table 3. Multivariate Linear Regression of Factors Associated with Labor Pain

Variable	B	Standard Error	Beta	P-value
First Model				
Intervention	-0.326	0.127	-0.326	0.013
Parity	-0.306	0.121	-0.305	0.014
Infant Weight	0.005	0.130	0.004	0.969
Mothers' Knowledge	0.185	0.120	0.185	0.131
Maternal Age	0.156	0.109	0.155	0.161
Final Model				
Intervention	-0.434	0.115	-0.435	0.000
Parity	-0.270	0.115	-0.269	0.023

IV. DISCUSSION

Characteristics of Respondents

The study involved 60 samples consisting of 30 participants in the intervention group and 30 in the control group. According to Table 1 above, it was found that as much as 20 mothers (80%) in the intervention group had pain perception to face childbirth while in the control group there were only 8 (27.7%). In other words, the majority of respondents in the control group (73.3%) had less pain perception to face childbirth. It also can be seen in the table that most of the respondents aged 35 years old or less, both in the intervention group (53.3%) and in the control group (60.0%).

Respondents who had 1 child in the intervention group were 22 people (73.3%) while 63.3% respondents in the control group had 2 children or more. As much as 66.7% infants in the intervention group weighed ≥ 3500 grams, while 60.0% infants in the control group weighed ≤ 3500 grams. Mothers who had good knowledge in the intervention group were 23 (76.7%) and 7 (30%) in the control group. It means that the Mini Note use could increase mothers' knowledge about labor pain.

The Relationship of the Mini Note Use to Maternal Perception of Labor Pain

The results of this study found that there was a significant difference of mothers' pain perception to face childbirth after giving health education using the Mini Note between the two groups. This shows that giving Mini Note during interventions in pregnancy could increase the pain perception of mothers to face labor pain. Labor process is identical to pain that will be experienced. One of important things that needs special concern in the labor process is labor pain. In the process of childbirth, labor pain is the most felt unpleasant and even frightening for the mother. A woman will show greater tolerance to labor pain if she gets appropriate support from people surrounding her. This woman will view that pain is a purposeful process to meet her baby (3). Mothers supported by doulas showed more affective interactions with their babies (15). In reverse, a woman who does not have a good environment, will see the pain of labor as a sign of damage and even threat to her life and baby (3).

The Mini Note was delivered through an education class. According to Kacperczyk-Bartnik (2019), participating in a prenatal education class could help pregnant women to cope and prepare childbirth. This form of preparation class enables mothers-to-be to obtain information about labor and childbirth, including labor pain. Since prenatal education class is not obligatory, the pregnant women's willingness to participate the class is also essential (16). In addition, as a recommendation from World Health Organization, a women's group learning can increase maternal and newborn health (17).

The Most Influential Factors on The Maternal Perception of Labor Pain

Importantly, this study found that the use of the Mini Note was the most influential factor in reducing labor pain perception. The Mini Note contains materials that help women to learn the physiological process of labor including labor pain,

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how to reduce labor pain, and how to deal with it. The Mini Note emphasizes about non-pharmacological techniques in relieving labor pain, such as relaxation technique, aromatherapy, hypnobirthing, breathing, counter pressure, endorphin massage, counselling, the presence of doula/family, rebozo, as well as water immersion. In the end page of the book, blank pages were provided to express feelings about the perception of the labor process in order to deal with labor pain.

The best way to deal with labor pain is to get information as clear as possible about labor pain. Specifically, by means of education, physiological and psychological therapy. The educational process plays an important and effective role in eliminating anxiety and fear caused by misinformation about the process of pregnancy and childbirth (18). Pregnant women can get labor and childbirth information through attending childbirth education and delivered by prenatal care providers as trustworthy persons (5). For that reason, conducting an antenatal education that is aimed to birth preparation and is implemented by prenatal care providers might be optimal approach to increase the pregnant women's confidence in dealing with labor and birth (5).

It is essential for pregnant women to understand the etiology of labor pain and the treatment in order to achieve better equity in maternal outcomes (10). Affective component such as feeling fear of childbirth can interrupt the positive feedback loop, in which the production of oxytocin hormone during the first stage of labor can stimulate the contractions, leading labor to obstruct or more painful contractions (10). Therefore, education class during pregnancy may decrease this feeling because it gave information about labor and childbirth. Moreover, the last page of the Mini Note enables pregnant women to share their emotions and perception about the birth expectation that made them more prepared.

The finding is also supported by Romanenko and colleagues' study which reveals that attending in a maternal education class was one of factor that could reduce the risk of severe labor pain (19). In addition, patients who could control pain well during childbirth had a reduced risk of severe labor pain compared with patients who had less pain control (19). Information about labor and birth preparation can be delivered since pregnancy, especially those who are in the last trimester of pregnancy. This relevant and timely information is one of recommendations of World Health Organization that help expectant mothers to feel satisfied with their pregnancy outcome (20). Antenatal education using the Mini Note facilitated pregnant women to prepare the upcoming labor and childbirth process with sufficient and relevant knowledge as well as information about the physiological process that will be experienced during labor and birth and how to deal with that condition.

V. CONCLUSIONS

In conclusion, there was a difference of the maternal pain perception in dealing with labor pain between the control and intervention groups. Parity and mothers' knowledge affected on pain perception to face labor pain. Then, the most influential factor in the maternal pain perception to face labor pain was the use of the Mini Note during antenatal class, after being controlled with variables of parity, baby weight, maternal knowledge and age. Thus, providing health education about preparation for labor pain using the Mini Note should be carried out starting at the third trimester of pregnancy in order to facilitate expectant mothers in dealing with labor pain.

REFERENCES

- 1) Lowe NK. The nature of labor pain. *Am J Obstet Gynecol.* 2002;186(5 SUPPL.):16–24.
- 2) Madhavanprabhakaran GK, D'Souza MS, Nairy KS. Prevalence of pregnancy anxiety and associated factors. *Int J Africa Nurs Sci.* 2015;3:1–7.
- 3) Van Rysewyk S. Meanings of Pain: Volume 2: Common Types of Pain and Language. Vol. 2, Meanings of Pain: Volume 2: Common Types of Pain and Language. 2019. 1–301 p.
- 4) Sri Rejeki BS. Acupressure metakarpal dapat mengurangi rasa nyeri pada ibu dalam proses persalinan kala I. In: *Proceeding Universitas Muhammadiyah Semarang.* 2014. p. 1–8.
- 5) Neerland CE, Avery MD, Saftner MA. Maternal confidence for physiologic birth: Associated prenatal characteristics and outcomes. *Midwifery [Internet].* 2019;77:110–6. Available from: <https://doi.org/10.1016/j.midw.2019.07.004>
- 6) Adams SS, Eberhard-gran M, Eskild A. Fear of childbirth and duration of labour : a study of 2206 women with intended vaginal delivery. 2012;15–8.
- 7) Klabbers GA, van den Heuvel MMA, van Bakel HJA, Vingerhoets AJJM. Severe fear of childbirth: Its features, assesment, prevalence, determinants, consequences and possible treatments | Miedo grave al parto: Sus rasgos, evaluación, prevalencia, determinantes, consecuencia y posibles tratamientos. *Psicol Teme.* 2016;25(1):107–27.
- 8) Simkin P, Hanson L, Ancheta R. *The labor progress handbook: early interventions to prevent and treat dystocia.* Fourth Edi. Wiley Blackwell; 2017.

Effectiveness of the Mini Note Use on Mother Pain Perception in Facing Labor Pain in South Tangerang Region Indonesia

- 9) Supliyani E. Pengaruh Masase Punggung Terhadap Intensitas Nyeri Persalinan Kala 1 Di Kota Bogor. *J Bidan*. 2017;3(01):22–9.
- 10) Mathur VA, Morris T, McNamara K. Cultural conceptions of Women’s labor pain and labor pain management: A mixed-method analysis. *Soc Sci Med [Internet]*. 2020;261:113240. Available from: <https://doi.org/10.1016/j.socscimed.2020.113240>
- 11) Prosser SJ, Miller YD, Thompson R, Redshaw M. Why “down under” is a cut above: A comparison of rates of and reasons for caesarean section in England and Australia. *BMC Pregnancy Childbirth*. 2014;14(1):1–13.
- 12) Goldberg D, Zasloff E. Labor Pain Management. In: *Integrative Medicine: Fourth Edition*. II. 2007. p. 571–7.
- 13) Sun Y-C, Hung Y-C, Chang Y, Kuo S-C. Effects of a prenatal yoga programme on the discomforts of pregnancy and maternal childbirth self-efficacy in Taiwan. *Midwifery*. 2010;26(6):e31–6.
- 14) Herawati R. Evaluasi Teknik Relaksasi Yang Paling Efektif Dalam Penatalaksanaan Nyeri Persalinan Kala I Terhadap Keberhasilan Persalinan Normal. *J Martenity Neonatal [Internet]*. 2016;2(2):102–13. Available from: <http://e-journal.upp.ac.id/index.php/akbd/article/view/1081>
- 15) Makino S. Pain Management During Labor. *J Obstet Gynaecol Res*. 2023;49(February):174–6.
- 16) Kacperczyk-Bartnik J, Bartnik P, Symonides A, Sroka-Ostrowska N, Dobrowolska-Redo A, Romejko-Wolniewicz E. Association between antenatal classes attendance and perceived fear and pain during labour. *Taiwan J Obstet Gynecol*. 2019;58(4):492–6.
- 17) Liang S, Zhang CC, Liu SS, Zhou Y, Zhang J, Kurgan L, et al. WHO recommendations on health promotion interventions for maternal and newborn health [Internet]. 2015. Available from: <http://dx.doi.org/10.1016/j.bpj.2015.06.056><https://academic.oup.com/bioinformatics/article-abstract/34/13/2201/4852827><https://semisupervised-3254828305/semisupervised.ppt><http://dx.doi.org/10.1016/j.str.2013.02.005><http://dx.doi.org/10.1016/j.str.2013.02.005>
- 18) Mander R. *Nyeri Persalinan*. Jakarta: EGC; 2004.
- 19) Romanenko A. Predictors of severe labor pain : prospective observational study. 2022;1–7.
- 20) World Health Organization. WHO Recommendations on Antenatal Care for A Positive Pregnancy Experience [Internet]. World Health Organization. 2016. Available from: https://www.researchgate.net/publication/269107473_What_is_governance/link/548173090cf22525dcb61443/downloadhttp://www.econ.upf.edu/~reynal/Civilwars_12December2010.pdf<https://think-asia.org/handle/11540/8282><https://www.jstor.org/stable/41857625>



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The Influence of Work Ability, Motivation, and Work Productivity on the Performance of Technical Skadron Personnel 024 Based of Indonesian Air Force Atang Sendjaja Bogor



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ABSTRACT: The purpose of this study was to analyze the effect of work ability, motivation and work productivity on the performance of the 024 Technical Squadron Atang Sendjaja Air Force Base, either simultaneously or partially. This research also wants to analyze which variables of work ability, motivation and work productivity have a dominant influence on the performance of 024 Technical Squadron personnel. This type of research is explanatory research. The study population was 93 personnel from the 024 Engineering Squadron Atang Sendjaja Air Force Base. Considering that the population was not too large, a census study was used, namely all non-commissioned officers from the 024 Engineering Squadron would become research respondents. The analytical method uses multiple linear regression and hypothesis testing. The results of the study show that work ability, motivation and work productivity on the performance of non-commissioned officers of the 024 Engineering Squadron both simultaneously and partially. Furthermore, this study identified that motivation has a dominant effect on the performance of the personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base.

KEYWORDS: Work Ability, Motivation, Work Productivity, and Performance

I. INTRODUCTION

The Indonesian Air Force is an integral part of the Indonesian National Armed Forces, which has the task of carrying out the duties of the Air Force in the field of defense, enforcing the law and maintaining security in the airspace of national jurisdiction in accordance with the provisions of national laws and international laws that have been ratified, carrying out the TNI's duties in development and development. the power of the air force and carry out the empowerment of the air defense area. The implementation of the above tasks is manifested in military operations of war (OMP) and military operations other than war (OMSP). (Savitri and Prabandari, 2020).

The Atang Sendjaja Air Force Base (ATS Air Base) is the Main Base (type A) which is in the ranks of the Indonesian Air Force Operations Command I (Koopsau I) located in the Bogor area, tasked with preparing and carrying out the operations of the air elements for which it is responsible. The success of these duties and responsibilities is greatly influenced by the level of readiness of the main weapon system (alutsista) of the air force, where the armaments that are the responsibility of the ATS Airbase are the SA-330 Puma, AS/NAS-332 Super Puma, and EC-725 AP helicopters. caracal. Helicopter readiness level, one of which is greatly influenced by its maintenance readiness, so that the reliability and safety of helicopters can always be maintained to carry out operations and exercises. Units in the ranks of the ATS air base on duty,

Skatek 024 is the implementing unit of the ATS air base which is tasked with organizing personnel training and maintenance of helicopter defense equipment to a moderate level and its components, and repairing components on a limited basis according to their authority. In carrying out maintenance tasks, in general the goal that must be achieved is that the helicopter can return to service (serviceable) normally, safely, and in accordance with the rules that have been set. (Fathuddin, 2022).

Skatek 024 personnel consist of officers, non-commissioned officers and privates. The personnel qualifications (officers, non-commissioned officers and enlisted men) consist of inspectors, air engineers (JMU), mechanics (aircraft engineering, sarban engineering, avionics, listmen), and supplies. Maintenance personnel (officers, non-commissioned officers and enlisted men) must have the ability to speak English because all maintenance books (manual books) are in English. Every year, Skatek 024 personnel take courses/education regarding aircraft maintenance systems such as at PTDI and Airbus France. Usually those who can follow

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are inspectors and JMU personnel who can speak English. For mechanics, usually those who are prepared to become JMU or inspectors. JMU and inspectors receive expertise allowances (Haryanto et al., 2018).

The success of the maintenance task at Skadron 024 is directly influenced by the ability of each personnel including inspectors, jmu, mechanics, and supplies to answer all problems that occur in aircraft maintenance, both scheduled and unscheduled maintenance and component replacement. To be able to become an inspector and JMU must go through inspector education and JMU education. To be able to take part in this education, a selection must be carried out including skills in aircraft maintenance, dedication in carrying out tasks, and health.

Facing this conceptual era, ATS air base cannot be separated from the element of Human Resources (HR). Human resources are the most important capital and assets of every operation and training activity, and are the one that most determines the success or failure of task implementation. ATS air base is required to always manage the human resources in it so that survival and progress can be achieved optimally (Wilson et al., 2021). The success of the ATS Lanud's tasks is influenced by the performance of the members, good performance is one of the targets that must be achieved in achieving high productivity.

Improving the performance of members of an organization requires proper management of human resources, so that the desired performance can be achieved as expected. According to Handoko (2011), factors that will affect member performance include: motivation, job satisfaction, work environment, compensation and/or salary system, economic aspects, technical aspects such as training, work ability, and behavior -other behavior. Therefore, human resource management policies, especially in efforts to improve the performance of members, must be based on an understanding of the factors that influence performance.

Member performance is basically an accumulation of factors of work motivation and work ability (Mangkunegara, 2007). Meanwhile, according to Sutrisno (2016: 104), indicators of work productivity include work ability and motivation. So that it can be said that work ability, motivation, and work productivity support each other in creating member performance, but the weakness of one of these factors can reduce member performance. Empirically, we often find a member with high work motivation in carrying out his work is not supported by high abilities, so that work productivity is not optimal, it will result in decreased performance, so that these factors are interconnected and mutually support each other to achieve high member performance. Besides that, With the right handling of resources makes the organization more dynamic and growing rapidly. Therefore, human resource management policies, especially in efforts to increase member performance, must be based on an understanding of the factors that influence performance, which will then be used as a basis for making human resource development policies. (Bariqi, 2018).

Improving member performance is not an easy job. Organizational management often has difficulty identifying the causes of low member performance. This is certainly understandable because there are many aspects that cause a decrease in member performance. The ability of the organization to identify all the problems that arise causing the performance of members to decrease is of course also limited, although some organizations use performance appraisal institutions to evaluate and provide solutions to problems faced by the organization. Regardless of all the strategies implemented by the organization in improving member performance. One of the simple and basic steps that must be considered by the organization is to identify and evaluate whether the needs of members have been fulfilled so far. This is very logical to question, because basically a person works, one of the main goals is to make ends meet. It is very unlikely that someone whose needs are not met will be able to work well, and it is very logical that someone whose needs are met can work quietly so that the member's performance will increase. These conditions must be considered by the organization in an effort to improve the performance of its members (Rukmini et al., 2022).

II. THEORETICAL BASIS

1. PERFORMANCE

A. Definition of Performance

According to Sinambela, et al (2018) employee performance is the ability of employees to do certain expertise. Sinambela (2018) performance refers to achieving employee goals for the tasks assigned to them. Sinambela (2018) that performance is defined as the result of an evaluation of the work carried out by individuals compared to the criteria that have been set together.

According to Mangkunegara (2017) The definition of performance (work achievement) is the result of work in quality and quantity achieved by an employee in carrying out tasks that are in accordance with the responsibilities given to him. According to Mangkunegara (2016: 67) the term performance comes from the word job performance or actual performance (work achievement or actual achievement achieved by a person). The definition of performance is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him Mangkunegara (2016: 67). Performance is the result of a process that refers to and is measured over a certain period of time based on predetermined conditions or agreements (Edison, 2016: 190). According to Mangkunegara (2016:

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According to Priansa (2017) performance is the success rate of employees in completing their work. Employee performance is one of the success factors in determining the achievement of tasks for individuals which can lead to determining the organizational performance of Rivai and Basri in Sinambela's book (2017: 478). According to Edison (2016) performance is the result of a process that refers to and is measured over a certain period of time based on predetermined conditions or agreements. Utami and Waluyo, (2017) also argued that the term performance comes from the word job performance or actual performance (work achievement or actual achievement), namely the quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him. According to Sutrisno (2016: 151) explains that, "performance is the result of work that has been achieved by a person from his work behavior in carrying out work activities. Performance itself refers to the level of achievement of tasks that make up an employee's work. According to Sutrisno (2016), performance is a person's success in carrying out tasks, According to Sapitri and Pancasila, (2022) Performance is important for an organization because an organization is formed to achieve a certain goal. Organizational work results are obtained from a series of activities carried out by the organization. Organizational activities can be in the form of managing organizational resources or the process of implementing work needed to achieve organizational goals. Torang (2016) says "Performance is the quantity and or quality of the work of individuals or groups within the organization in carrying out basic tasks and functions that are guided by norms, standard operating procedures, criteria and measures that have been set or that apply in the organization".

Based on the definition above, it can be concluded that performance is one of the factors in the success of achieving a task or the result of one's work in terms of quality and quantity of targets to be achieved or tasks to be carried out within a certain period of time both in quality and quantity.

B. Factors Affecting Performance

Sinambela (2018: 498) argues that basically performance is divided into two, as follows:

1. Individual (Employee)

Matters that affect individuals in achieving the performance that has been agreed upon by the company are as follows: a. Many of the employees have had bad experiences with performance management, b. No one likes to be criticized, c. Confusion in interpreting work assignments, d. Employees often don't understand what performance management is for and don't see it as something that is useful to them.

2. Company

a. The forms and procedures used by the organization do not make sense, they are just a pile of administrative work that has no purpose, b. Don't have time, c. Do not like to fight with employees, because employees will feel attacked and this never feels comfortable, d. It's hard to give feedback to employees.

According to Priansa, (2017) factors that can affect employee performance are as follows:

Individual abilities, including talents, interests, and personality factors. Skill level is a raw material possessed by a person in the form of knowledge, understanding, ability, intrapersonal skills, and technical skills. Thus it is possible for an employee to have good performance, if the employee's performance has a good skill level, the employee will also produce good results.

Efforts devoted, Efforts devoted to employees are when working, attendance, motivation. The level of effort is an illustration of the motivation shown by employees to complete the job well. Therefore, if the employee has the skill level to do the job he will not perform well with little effort. This relates to the difference between the level of skill and the level of effort, the level of skill is a reflection of the ability to do while the level of effort is a reflection of something done.

Organizational environment In the organizational environment, companies/agencies provide facilities for employees which include training and development, equipment, technology and management. Meanwhile, according to Sutrisno (2016: 151) suggests that there are two factors that influence performance, namely: 1. Individual factors, this includes effort, nature, all behaviors and activities deemed necessary by individuals to complete a job. 2. Environmental factors include physical conditions, equipment, time, materials. This factor does not directly affect individual factors.

From this statement, it is clear that to get a picture of a person's performance, a special assessment of abilities and motivation is needed. Among the several factors that affect a person's performance, it turns out that what can be intervened or treated through education and training is the capability factor that can be developed. The high or low performance of an employee is of course determined by the factors that influence him either directly or indirectly. Mangkunegara (2016) states that: "Factors that influence performance achievement are ability factors and motivation factors. Meanwhile, according to Mangkunegara (2016) it is formulated that the factors that can affect performance are:

$$\text{Human Performance} = \text{Ability} + \text{Motivation}$$

$$\text{Motivation} = \text{Attitude} + \text{Situation}$$

$$\text{Ability} = \text{Knowledge} + \text{Skill}$$

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C. Efforts to Improve Employee Performance

According to Priansa (2017) organizational goals can be achieved if the organization is supported by the work units contained therein. Efforts that can be made to improve data performance are carried out in ways as presented in table 1

Table 1. Employee Performance Improvement Efforts

No	Effort	Explanation
1	Giving Hope	In general, employees who have high performance expect various recognition from the company, both in terms of material, social, internal, and certain career paths in accordance with their abilities.
2	Development	Efforts to improve employee performance can also be designed in an employee development scheme that is in accordance with employee performance. Employees who produce high performance can be promoted according to the needs of the position.
3	Communication	Superiors are responsible for evaluating employee performance and accurately communicating the assessments being made.

2. Workability

A. Definition of Work Ability

An employee's ability consists of achievement ability and reality ability (knowledge skill). This means that an employee with an intelligence level (IQ) above average (110-120), has a sufficient level of education in the position and has the skills to carry out daily work, then the employee can more easily achieve the optimal performance expected. In this case, employees should be placed in jobs that match their expertise (the right man on the right job, the right man in the right place) (Mangkunegara, 2011:67). Furthermore, ability according to Gibson (2012: 54) is a trait that allows a person to complete tasks that are innate/learned. Ability is an individual's capacity to carry out various tasks in a particular job (Robbins and Judge, 2013).

Toha (2011) defines ability as the maturity of a person related to skills or knowledge obtained from the education/training process and from an experience. Meanwhile, Robbins (2011) describes work ability as a person's capacity to carry out various tasks in a particular job where a person's ability essentially consists of 2 (two) factors, namely physical ability and intellectual ability. So the ability here can be interpreted as a situation where employees or employees can complete tasks properly and correctly or in other words have competencies that come from education, experience, training and development so that they have a positive influence on their performance.

B. Capability Indicator

Robins and Judge (2013) stated that there are various abilities needed in an institution to run effectively. Various abilities that should be possessed as an effort to achieve effectiveness in work include:

1. Technical ability, confidence in the ability to apply special knowledge or expertise, including the ability to work in a group atmosphere/condition where agencies are free and feel safe in conveying problems.
2. Human ability, namely the ability to understand, communicate, motivate and support others.
3. Conceptual ability, namely the mental ability to analyze and diagnose situations, such as identifying existing problems, finding alternative solutions to fix problems, evaluating various solutions and choosing the best one, the ability to integrate new ideas with existing processes and innovate in work.

3. Motivation

A. Definition of Motivation

According to Handoko (2015) Motivation is an activity that causes and maintains human behavior. According to Winardi (2015) Motivation is something that causes, distributes, and supports human behavior, so that they want to work hard and enthusiastically achieve optimal results. Managers need to understand this psychological process if they are to be successful in coaching employees toward accomplishing organizational goals. Jufrizen and Sitorus, (2021) states motivation as a process that causes the intensity, direction and continuous effort of individuals towards achieving goals. Intensity shows how hard a person is trying. But high intensity is unlikely to lead to good performance results, unless the effort is made in a direction that benefits the organization. Because it must be considered the quality of effort and intensity. Motivation has a dimension of continuous effort.

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Motivation is a measure of how long a person can keep their efforts. Motivated individuals will carry out tasks long enough to achieve their goals.

Meanwhile, Wibowo (2016) argues that motivation is a series of processes that arouse, direct and maintain human behavior towards achieving goals. Arousing has to do with the drive or energy behind the action. Motivation is also concerned with the choices people make and the direction of their behavior. Meanwhile, the behavior of maintaining or maintaining how long people will continue to try to achieve goals. According to Hasibuan (2017) Motivation is the desire that exists in an individual that stimulates him to take actions.

According to Saleh and Utomo, (2018) Widodo motivation is the power that exists within a person, which encourages his behavior to take action. The magnitude of the power incentive in a person to perform a task or achieve a goal shows the extent to which the level of motivation is. Motivation according to Handoko (2011), motivation is "a state in a person's personality that encourages the individual's desire to carry out certain activities in order to achieve goals." Then according to Mangkunegara (2014) motivation is "a condition or energy that drives employees who are directed or directed to achieve the company's organizational goals". In addition, Serdamayanti (2014) suggests that motivation is "the desire that exists in an individual that stimulates him to take action." Further mentioned Serdamayanti (2014), motivation is "the willingness to expend a high level of effort towards organizational goals conditioned by the ability of that effort to meet individual needs." Then Sutrisno (2016) states that motivation is "something that gives rise to work motivation." From some of the meanings above, it can be concluded that motivation is an impulse that moves a person to participate in achieving the goals set by the company.

B. Work Motivation Indicator

According to Hasibuan (2017), that employee motivation is influenced by the need for achievement, the need for affiliation, the need for competence and the need for power. Then from the needs factor it is derived into indicators to determine the level of work motivation in employees, namely:

1. The need for achievement, namely a desire to overcome/beat a challenge, for progress, and growth.
2. The need for affiliation, namely the urge to make relationships with others.
3. The need for competence, namely the drive to do quality work.
4. The need for power, namely the urge to control a situation. In this case there is a tendency to take risks and destroy obstacles that occur.

4. Work Productivity

A. Definition of Work Productivity

According to Hartatik (2018), reveals that more simply, the meaning of "productivity is a mathematical comparison between the amount produced and the amount of each source used during production, and these sources can be in the form of land, raw materials and auxiliary materials, factories, machines, and tools, and labor." Productivity is defined as the relationship between tangible and physical results (goods or services) with actual income (Sinungan 2017). The definition of productivity according to experts is as follows: Sinungan (2017), defines "productivity as the ratio between the totality of expenses at a certain time to the totality of inputs during that period".

According to Marwansyah (2016) Work productivity can be interpreted as concrete results (products) produced by individuals or groups, especially in terms of quantity. According to Sutrisno (2016), "productivity is a measure of productive efficiency. A comparison between output and input results. According to Sutrisno (2016), stated that "productivity is a mental attitude that is always looking for improvements to what already exists. A belief that one can do a better job today than yesterday and tomorrow better than today. According to Yusuf (2016) work productivity is a measure that shows consideration between the inputs and outputs issued by the company and the role of the workforce owned by the union of time,

B. Factors Affecting Work Productivity

According to Yusuf (2016) productivity factors have a big role in determining a business. Factors that affect productivity include:

1. Knowledge, is the result of an educational process that is obtained formally or non-formally which contributes to a person in problem solving, creativity, including in carrying out or completing work so that an employee is expected to be able to do work productively.
2. Skills, this is operational technical ability and mastery regarding a particular field, skills are obtained through a process of learning and practicing. With the skills possessed by an employee, it is expected to be able to complete work productively.
3. Attitudes and behavior, this is very close relationship between habits or attitudes and behavior. If the employee's attitude is good, then this can guarantee good work behavior. Therefore, human behavior is determined by attitudes that have been embedded in employees so that they can support effective work.
4. Capability, this aspect is formed from a number of competencies possessed by an employee. knowledge and skills are among the forming factors of ability, thus if someone has high knowledge and skills it is expected that they will also have high abilities.

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III. RESEARCH METHODS

This research is a quantitative research. This type of research is causal comparative using three independent variables and one dependent variable. The results of the influence between the variables studied will be explained in more depth so that this type of research is explanatory / explanation. According to Sugiyono (2009) explanatory / explanatory research is research that aims to find out and explain the relationship between two or more variables, looking for the influence of causal relationships between independent variables (variables that influence) and dependent variables (variables that are influenced).

A. Research Variables

In this study there are independent variables and dependent variables. As for these variables:

Dependent Variable : Member Performance (Y)

Independent variable: Work Ability(X1)

Motivation (X2)

Work Productivity (X3)

B. Research Instruments

The instrument used in this study was a questionnaire, which was arranged in the form of a statement sentence. Respondents are kindly asked to fill in the list of statements with the answers provided by marking (v) in the box provided. Respondent's choice explained that when choosing:

1. Score 5 for SS answer choices (strongly agree)
2. Score 4 for answer choice S (agree)
3. Score 3 for answer choice N (neutral)
4. Score 2 for TS answer choices (disagree)
5. Score 1 for the STS answer choices (strongly disagree)

Table 2. Variables, Indicators and Statement Items

No.	Variable	Indicator	Question Items
1	Workability (X1)	1. Technical Capability	1. Personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base provide easy service in accessing community services 2. Personnel of Engineering Squadron 024 Atang Sendjaja Bogor Air Force Base are disciplined in carrying out working hours
		2. Human ability	1 The rapid response of personnel from the 024 Technical Squadron at the Atang Sendjaja Bogor Air Force Base in responding to complaints from the public 2. Willingness of 024 Technical Squadron personnel at the Atang Sendjaja Bogor Air Force Base in helping the community
		3. Conceptual Ability	1. Personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base provide guarantees that if an error occurs in the performance results it will be corrected 2. Personnel are honest, polite and friendly to everyone
2.	Motivation	1. Need for Achievement	1. I always strive for excellence in work 2. I want to always be creative by using the potential that I have
		2. The Need for Affiliation	1. I have a good relationship between superiors and subordinates so that mutual respect and respect are fostered. 2. I establish a harmonious relationship between personnel to foster cooperation.

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		3. Need for Competence	<p>1. Every personnel has the opportunity to attend training and training.</p> <p>2. Every personnel has the same opportunity for promotion.</p>
		4. The need for power	<p>1. I am ready to accept higher responsibilities</p> <p>2. I am able to use my potential for a higher task</p>
3.	Work Productivity (X3)	1. Knowledge	<p>1. Personnel have knowledge of the substance of a particular job</p> <p>2. Education of personnel obtained formally and non-formally which contributes to someone in solving problems</p>
		2. Skills	<p>1. The skills that members have are in accordance with the field of work</p> <p>2. The skills possessed by a personnel are expected to be able to complete work productively</p>
		3. Attitude	<p>1. If a personnel makes a mistake, he must be able to accept a reprimand from his superiors</p> <p>2. Attitudes that have been embedded in the personnel so that they can support effective work</p>
4.	Performance	1. Quality of Work	<p>1. Personnel are able to maximize their ability to work at Engineering Squadron 024 Atang Sendjaja Bogor Air Force Base</p> <p>2. Personnel are able to complete the work in accordance with work standards</p>
		2. Working Quantity	<p>1. Personnel are able to work in accordance with the procedures set by the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base</p> <p>2. Personnel are able to achieve the work targets given by the Engineering Squadron 024 Atang Sendjaja Bogor Air Force Base</p>
		3. Responsibility	<p>1. It is my responsibility to get the job done</p> <p>2. Personnel are responsible for trying to reduce errors in working at the 024 Engineering Squadron Atang Sendjaja Bogor Air Force Base</p>
		4. Cooperation	<p>1. Personnel have a good cooperative relationship with colleagues in the 024 Engineering Squadron Atang Sendjaja Bogor Air Force Base</p> <p>2. Communication between personnel and superiors from the 024th Engineering Squadron Atang Sendjaja Bogor Air Force Base has always been well established.</p>
		5. Initiative	<p>1. Personnel always work independently and automatically without supervision</p> <p>2. Without being ordered by personnel to help colleagues in completing work so that they can achieve the desired goals</p>

C. Validity Test

The instrument is said to be valid if the instrument is able to measure what is desired and can capture data from the variables that are written correctly. The level of instrument validity indicates the extent to which the collected data does not deviate from the

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description of what is intended (Arikunto, 2008). In this study, the validity test was carried out using the Pearson's product moment correlation approach, namely correlating the item scores of $\alpha = 0.05$ (5%), meaning that the questionnaire has high validity or validity, namely the questions in the questionnaire can measure its measurement function as desired by Ghozali (2007).

D. Reliability Test

The reliability test is used to test the extent to which the instrument can give relatively similar results and can be re-measured on the same subject. A good measuring tool does not vary in measurement, meaning that even if this tool is used many times it will give almost similar results (Arikunto, 2008). In this study, the reliability test was carried out using the Alpha Cronbach approach. The criterion is if Cronbach's Alpha value > 0.60 it is said that the questionnaire has high reliability Ghozali (2007).

IV. RESEARCH RESULTS AND DISCUSSION

A. Validity and Reliability of Research Instruments

To determine the level of understanding / validity of the respondents to the questionnaire items, a validity test was carried out. In addition, researchers also want to know the level of consistency of respondents' answers to what has been asked. To find out the consistency of the respondents in answering the questionnaire items, a reliability test was carried out. Below are the results of testing the validity and reliability using the SPSS 25.0 program, summarized in the following table:

1. Validity Test Results

The results of the validity test on the 15 statement items that measure the variables of work ability, motivation, work productivity and personnel performance are as follows:

Table 3. Validity Test Results

Variable	items	Correlation coefficient	r. Table	Sig.	Information
Workability (X1)	X1.1	.916**	0.233	.000	VALID
	X1.2	.916**	0.233	.000	VALID
	X1.3	.447**	0.233	.000	VALID
Motivation (X2)	X2.1	.923**	0.233	.000	VALID
	X2.2	.789**	0.233	.000	VALID
	X2.3	.703**	0.233	.000	VALID
	X2.4	.695**	0.233	.000	VALID
Work productivity(X3)	X3.1	.940**	0.233	.000	VALID
	X3.2	.940**	0.233	.000	VALID
	X3.3	.311**	0.233	.000	VALID
Performance (Y)	Y1.1	.533**	0.233	.000	VALID
	Y1.2	.438**	0.233	.000	VALID
	Y1.3	.510**	0.233	.000	VALID
	Y1.4	.775**	0.233	.000	VALID
	Y1.5	.775**	0.233	.000	VALID

Source: data processed in 2022

The test results above show that the r count value for 15 statement items obtains a value below the r table provisions (0.233) or a probability value (sig. 2-tailed) for 15 questionnaire items produces a probability value below 0.05. The comparison shows that the respondents understand the 15 items in the questionnaire submitted by the researcher. Thus all the questionnaire items in this study were declared valid.

2. Reliability Test Results

In addition to the validity test, each item of the research questionnaire/instrument for each variable is expected to be answered consistently/reliably. A variable is said to be reliable if the Cronbach's Alpha value obtained from the calculation results exceeds or is greater than the specified cut-off of 0.6

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Table 4. Reliability Test Results

Variable	Alpha Cronbach	R table	information
Workability (X1)	0.808	0.6	Reliable
Motivation (X2)	0.884	0.6	Reliable
Work productivity (X3)	0.816	0.6	Reliable
Personnel Performance (Y)	0.758	0.6	Reliable

Source: data processed in 2022

The test results above show that Cronbach's Alpha values for the four variables studied which represent the 15 research questionnaire items produce values that are still below the cut-off number (0.6). This comparison shows that the respondents were consistent in answering the 15 questionnaire items proposed by the researcher. Thus all the items in the questionnaire in this study were declared reliable.

B. Discussion of Research Results

1. Description of research variables

The work capability of the 024 Technical Squadron personnel at the Atang Sendjaja Bogor Air Force Base was measured by 3 indicators namely technical ability, human ability and conceptual ability. For indicators of technical ability, most respondents tended to strongly agree that the personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base provide service convenience in accessing community services. This shows that the personnel of Engineering Squadron 024 Atang Sendjaja Bogor Air Force Base have the ability to serve public complaints. As for the indicator of human ability, which is quick to respond, it is shown that the rapid response of personnel from the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base in responding to complaints from the public.

For indicators of conceptual ability, namely providing guarantees if an error occurs in the performance results, it is shown that most respondents tend to agree to choose the statement of the 024th Technical Squadron Personnel at the Atang Sendjaja Bogor Air Force Base, providing guarantees that if an error occurs in the performance results, it will be corrected. The results of the analysis of the description of work ability found that the work ability of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base affects the performance of personnel, so the work ability of personnel is needed.

The motivation of 024 Technical Squadron personnel at the Atang Sendjaja Bogor Air Force Base is measured by 4 indicators namely the need for achievement, the need for affiliation, the need for competence and the need for power. For indicators of the need for achievement, namely trying to achieve excellence, it shows that I always try to achieve excellence at work.

For indicators of the need for affiliation, namely having a good relationship between superiors and subordinates, it is shown that I have a good relationship between superiors and subordinates so that mutual respect and respect are fostered. For indicators of the need for competence, namely the opportunity to take part in training and training, it is shown that every personnel has the opportunity to take part in training and training. An indicator of the need for power is that I am ready to accept higher responsibilities. The results of the analysis of the description of motivation found that motivation influenced the performance of the 024th Engineering Squadron Atang Sendjaja Bogor Air Force Base. The work productivity of the personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base is measured by 3 indicators namely knowledge, skills and attitudes.

For the indicator of knowledge, namely having knowledge, it is shown that most respondents tend to agree in choosing the statement that personnel have knowledge about the substance of a particular job. For skills indicators, namely having appropriate skills, it is shown that most respondents tend to agree in choosing the skills statement that members have in accordance with the field of work. For the attitude indicator, namely the attitude of being willing to accept a reprimand from a superior, it is shown that most respondents tend to agree to choose a statement. If a personnel makes a mistake, he must be able to accept a reprimand from a superior.

The results of the analysis of the description of work productivity found that the work productivity of the personnel of the 024 Engineering Squadron Atang Sendjaja Bogor Air Force Base affects the performance of personnel to be more active in their duties. The performance of the personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base is measured by 5 indicators namely quality of work, quantity of work, responsibility, cooperation and initiative. As for the indicators of work quality, namely being able to maximize their ability to work, it was shown that most respondents tended to agree that personnel were able to maximize their ability to work at the 024th Engineering Squadron Atang Sendjaja Bogor Air Force Base.

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For the quantity of work indicators, namely being able to work according to procedures, it was shown that most respondents tended to agree to choose the statement that personnel were able to work according to the procedures set by the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base. For the indicator of responsibility, namely that it has become my responsibility to complete the work, it is shown that most respondents tend to agree that it is my responsibility to complete the work. For cooperation indicators, namely having a good cooperative relationship with co-workers, it is shown that most respondents tend to agree to choose the statement that personnel have a good cooperative relationship with co-workers at the 024 Engineering Squadron, Atang Sendjaja TNI AU Base, Bogor.

2. The relationship between research variables

The performance of personnel at the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base is measured on the quality of work, quantity of work, responsibility, cooperation and initiative. The results of the analysis of the description of the performance found that the performance of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base was able to complete the job on time in accordance with the targets and conditions that were imposed. Thoah (2011) defines ability as the maturity of a person related to skills or knowledge obtained from the education/training process and from an experience. According to the respondent's perception, it was found that the work ability of personnel can affect performance. The results of the analysis of the description of work ability found that the work ability of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base affects the performance of personnel, so it is necessary to complete work ability with other fellow personnel. The results of the study are similar to the research of Mega Sukma Manggarsari (2015), Title Effects of Work Attitude, Work Motivation and Organizational Commitment on Employee Performance in Pandaan Cooperatives and Small Enterprises, Pasuruan. The results of the study Organizational Commitment have a positive and significant effect on employee performance. Pasuruan. The results of the study Organizational Commitment have a positive and significant effect on employee performance. Pasuruan. The results of the study Organizational Commitment have a positive and significant effect on employee performance.

According to Jufrizen and Sitorus, (2021) motivation is the power that exists within a person, which drives his behavior to take action. The magnitude of the power incentive in a person to perform a task or achieve a goal shows the extent to which the level of motivation. According to Susie, (2016) The results of the study show that work ability and motivation have a positive and significant effect on employee performance at the South Sulawesi Provincial Education Office in Makassar City. The results of the analysis of the description of motivation found that the motivation of the personnel of the 024 Engineering Squadron Atang Sendjaja Bogor Air Force Base affects the performance of personnel so that they are not disturbed while on duty. According to Marwansyah (2016) Work productivity can be interpreted as concrete results (products) produced by individuals or groups, especially in terms of quantity. The results of the analysis of the description of work productivity found that the work productivity of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base affects the performance of personnel to be the most productive at work.

From the results of research that work productivity is very influential on the performance of personnel. As the work productivity of personnel increases, it can produce very good performance. Some explanations about the results of this study compared with the results of previous studies can be concluded that personnel who have roles and functions to carry out service work, especially services to the community, require quality, quantity, responsibility and initiative of personnel on duty. If all are fulfilled then the opportunity to achieve good performance is realized.

V. CONCLUSIONS

This study explains the influence of work ability, motivation and work productivity on the performance of personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base, where the results of research conclusions based on the objectives of the problem are presented below:

1. The ability to work obtained a good perception by the personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base, responded positively by respondents. Motivation of personnel needs for achievement found that trying to achieve excellence in work can lead to motivation Work productivity of personnel can be found that knowledge, skills and attitudes can improve personnel performance. The performance of the 024 Technical Squadron personnel at the Atang Sendjaja Bogor Air Force Base found that the quality of work and the quantity of work were able to complete the work on time in accordance with the rules and regulations in force.
2. The results of the study show that work ability, motivation, and work productivity affect the performance of 024 Technical Squadron Atang Sendjaja Bogor Air Force Base. Work ability, motivation and work productivity in responding quickly to instructions have a positive impact on personnel performance to complete work on time.

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3. Personnel work ability is the most dominant measured symptom and has the most influence on personnel performance. Thus the increase in the performance of personnel in the personnel of the 024 Technical Squadron Atang Sendjaja Bogor Air Force Base is greatly influenced by the quality of work, the quantity of work and work productivity.

REFERENCES

- 1) AA Anwar Prabu Mangkunegara. 2007, Human Resource Management, Seventh Printing, Bandung: PT. Rosdakarya youth
- 2) A A. Anwar Prabu Mangkunegara, 2014, Corporate Human Resource Management, PT. Rosdakarya Youth, Bandung
- 3) AA Anwar Prabu Mangkunegara. 2015. Company Human Resource Management. Bandung : PT. Rosdakarya youth
- 4) AA Anwar Prabu Mangkunegara. 2016. Company Human Resource Management. Bandung : PT. Rosdakarya youth
- 5) AA Anwar Prabu Mangkunegara. 2017. Corporate Human Resource Management, Bandung: Rosdakarya Youth
- 6) Arikunto, Suharsimi. 2008. Research Procedures A Practice Approach. Yogyakarta: Literacy Development
- 7) Bariqi, MD (2018). Training and Development of Human Resources. *Journal of Management and Business Studies*, 5(2), 64–69. <https://doi.org/10.21107/JSMB.V5I2.6654>
- 8) Donni Junni Priansa. 2017. Consumer Behavior in Contemporary Business. Bandung: Alfabeta
- 9) Edy, Sutrisno, 2016, Human Resource Management, Kencana Prenada Media Group, Jakarta.
- 10) Edison, Emron., et al. 2016 Human Resource Management. Alfabeta. Bandung
- 11) Fathuddin. (2022). SETTLEMENT OF AGRICULTURAL LAND DISPUTES IN THE CONSTRUCTION OF COMMERCIAL AIRPORT (CASE STUDY OF THE ATANG SANJDAYA AIR FORCE FIELD IN KEC. KEMANG, REGENCY OF BOGOR). <https://repository.uinjkt.ac.id/dspace/handle/123456789/63298>
- 12) Ghozali, I. 2007. Multivariate Analysis with the SPSS Program. 2nd edition Semarang: Diponegoro university.
- 13) Gibson, James L., Donnelly Jr., James H., Ivancevich, John M., Konopaske, Robert (2012). *Organizational Behavior, Structure, Processes, Fourteenth Edition (International Edition)*. 1221 Avenue of The Americas, New York, NY 10020: McGraw-Hill.
- 14) Hamali, Arif Yusuf. 2016. Understanding Human Resources. Yogyakarta: CAPS.
- 15) Hartatik, Praise, Indah, 2018, Human Resources, Jogjakarta: Laksana
- 16) Haryanto, N., Gunardi, S., & Dar, D. (2018). The Influence of the Work Environment and Qualifications of Maintenance Personnel on the Operational Readiness of the 101 Education Squadron, 2017 Yogyakarta Air Force Base Adisutjipto. *Air Defense Strategy*, 4(2). <https://doi.org/10.33172/JSPU.V4I2.246>
- 17) Hasibuan, Malayu SP 2017. Human Resource Management. Revised Edition. Jakarta: PT Bumi Aksara Publisher.
- 18) Handoko. (2015). Human Resource Management, First Matter. Bandung: Faithful Library, Bandung.
- 19) Hani Handoko, 2011, Personnel Management and Human Resources. BPFE, Yogyakarta.
- 20) Jufrizen, J., & Sitorus, TS (2021). The Effect of Work Motivation and Job Satisfaction on Performance with Work Discipline as Intervening Variables. *National Seminar on Educational Technology in Social and Humanities*, 1(1 SE-Articles), 844–859. <https://doi.org/10.53695/syntesa.v1i1.419>
- 21) Marwansyah. 2016. HUMAN RESOURCES MANAGEMENT. Bandung: Alfabeta.
- 22) Miftah Thoha. (2012). Basic Concepts of Organizational Behavior and Its Implications. Jakarta: Rajawali Press
- 23) Mega Sukma Manggarsari, 2015. The Effect of Work Attitude, Work Motivation and Organizational Commitment on Employee Performance at PT. Patrinsaka Gempol - Pandaan, Pasuruan.
- 24) Robbins, Stephen P. & A. Judge, Timothy (2011). *Organizational behavior*. Fourteenth Edition. Pearson education. New Jersey 07458. 77-89*.
- 25) Robbins, Stephen P & Judge, Timothy A. 2013. *Organizational Behavior Edition 15*. New Jersey: Pearson Education
- 26) Rukmini, M., Nuwa, CAW, Qosim, N., Suhartanta, S., Abdurrohman, A., Ristiyan, R., MS, MZ, Santoso, A., Santoso, R., Sharon, SS, Luju, E., Sofyanty, D., & Samosir, MS (2022). Implementation of Regional Financial Management (Governance Towards Good Governance). In S. Kelvin (Ed.), *Eureka Media Aksara*. Eureka Media Script.
- 27) Saleh, AR, & Utomo, H. (2018). THE INFLUENCE OF WORK DISCIPLINE, WORK MOTIVATION, WORK ETHOS AND WORK ENVIRONMENT ON THE WORK PRODUCTIVITY OF EMPLOYEES IN THE PRODUCTION SECTION AT PT. INKO JAVA SEMARANG. *Among Makarti*, 11(1). <https://doi.org/10.52353/AMA.V11I1.160>
- 28) Sapitri, D., & Pancasasti, R. (2022). Moderation Effects of Organizational Culture for Improving Employee Performance. *Technomedia Journal*, 6(February 2), 252–262. <https://doi.org/10.33050/TMJ.V6I2.1756>
- 29) Savitri, RNR, & Prabandari, AP (2020). Indonesian Air Force and Airspace Security. *Indonesian Journal of Legal Development*, 2(2). <https://doi.org/10.14710/jphi.v2i2.236-245>
- 30) Sedarmayanti. (2014). Human Resource Management. Bandung: Refika Aditama.

The Influence of Work Ability, Motivation, and Work Productivity on the Performance of Technical Skadron Personnel 024 Based of Indonesian Air Force Atang Sendjaja Bogor

- 31) Sinambela, Lijan Poltak. 2018. Public Service Reform Theory, Policy and Implementation, PT. Earth Script, Jakarta
- 32) Sinambela, Lijan Poltak. 2017. Human Resource Management. Jakarta: Earth Script
- 33) Sinungan, Muchdarsyah. 2017. Productivity What and How. 9th printing. Jakarta: Bumi Aksara.
- 34) Sugiyono. (2009). Business Research Methods. Bandung: CV. Alfabet.
- 35) Susi, Y. (2016). INDICATORS OF EMPLOYEE DISCIPLINE AT THE CURRENT HOTEL IN PONTIANAK. BIS-MA (Business Management), 1(6). <https://journal.widyadharma.ac.id/index.php/bisma/article/view/334>
- 36) Torang, Dr. Syamsir. 2016. Organization & Management (Behaviour, Structure, Culture, & Organizational Change). Bandung : Alfabet.
- 37) Utami, AS, & Waluyo, HD (2017). THE EFFECT OF ORGANIZATIONAL CULTURE, MOTIVATION AND WORK DISCIPLINE ON EMPLOYEE PERFORMANCE AT KSP LOHJINAWA. Journal of Business Administration;, 6(3), 465–473. <https://doi.org/https://doi.org/10.14710/jiab.2017.16759>
- 38) Wibowo. 2016. Effect of Work Motivation on Employee Performance at PT. Gramedia Asri Media, Emerald Bintaro Branch. Computech & Business, 119- 127.
- 39) Wilson, N., Rowena, J., Susilawaty, L., Diayudha, L., Helena, S., & Pendi, M. (2021). LEAD THE TEAM EFFECTIVELY AND OPTIMALLY TO ACHIEVE SUCCESS AND SUCCESS AS DESIRED BY THE COMPANY. Journal of Service and Entrepreneurship, 5(1). <https://doi.org/10.30813/JPK.V5I1.2722>
- 40) Winardi. 2015. Organizational Behavior Management, Revised Edition, Prenada Media Group, Jakarta
- 41) Yusuf Burhanuddin 2016. Human Resource Management, PT. Raja Grafindo Persada, Jakarta.



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Analysis of the Effectiveness of Attendance Presentation, Discipline and Commitment Effectiveness on Member Performance at the Personnel Service of the Indonesian Armed Forces



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ABSTRACT: This research was conducted at TNI Jakarta Headquarters with the aim of knowing the effect of the effectiveness of attendance, discipline and commitment on the performance of members in the personal service. The method used in this research is quantitative with explanatory research. As a result, both effectiveness, discipline and commitment both have a positive impact on member performance. However, from all of them it was found that effectiveness is the most dominant and influences the performance of members

KEYWORDS: Performance, Effectiveness Discipline, Commitment, TNI Headquarters, Jakarta.

I. INTRODUCTION

The role of humans in organizations as members plays a decisive role because the life and death of a government organization depends solely on humans. Members are an important factor in any organization. Members also play a role as a determining factor in achieving agency objectives effectively and efficiently. Members become the driving force and determinant of the course of the Indonesian National Armed Forces Headquarters (TNI Headquarters).

The effectiveness of attendance is usually in the form of a Finger Print, which is an attendance machine that uses a fingerprint scanning system to work. The Headquarters of the Indonesian National Armed Forces (TNI Headquarters) has implemented member attendance with a fingerprint system. The new system was implemented to monitor the presence of members at the Headquarters of the Indonesian National Armed Forces (TNI Headquarters) every day. The Head of the Personnel Service (Kadispsers) said that starting on August 3, 2015, the finger print presence system was implemented for all members within the Indonesian National Armed Forces Headquarters (TNI Headquarters). Through this fingerprint, the performance of the members and the employees themselves can be monitored. Nani & Wijaya, (2020) responding to the finger print at the Headquarters of the Indonesian National Armed Forces (TNI Headquarters) is very good, with this system members will more regularly go to the Headquarters of the Indonesian National Armed Forces (TNI Headquarters). Members can no longer entrust attendance to their friends, because this equipment only records the fingerprints of the member and the member concerned, besides that this equipment works online and can be monitored from a computer connected to the equipment. This fingerprint also makes it easier for the administrator to record the attendance of members at the Headquarters of the Indonesian National Armed Forces (TNI Headquarters).

In carrying out activities, members need work instructions from agencies so that their implementation is in accordance with the plan and must be supported by institutional work regulations so as to create work discipline. The implementation of work discipline itself must be managed properly by the members because with a lack of discipline the members will work less well, not optimally which will result in the performance of the Indonesian National Armed Forces Headquarters (TNI Headquarters) to decline. Basically an agency must prioritize public services, in this case there is something that must be considered by the agency, namely the performance of members, in this case, timeliness.

Member discipline is very necessary to improve the image, work and performance of members. Discipline is efforts to instill values or coercion so that the subject is able to obey a rule. Meanwhile, member discipline is the ability to comply with obligations and avoid prohibitions specified in statutory regulations and/or official regulations which, if not adhered to or violated, will be subject to punishment. However, in reality there are still many members who commit violations. For example, there are still members

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who are not disciplined in working hours. There are still many members who don't come on time and go home early and maybe even leave without permission before working hours are over.

In this research, a case study of violations was taken by the researcher, namely at the Personnel Service at the Headquarters of the Indonesian National Armed Forces (TNI Headquarters). Types of violations committed by members such as behavior that is not in accordance with the member's code of ethics and delaying work and leaving the office during working hours to attend to personal interests and sometimes members do not have prior permission from superiors. So if other members or superiors need these members, it will be difficult to find them and office work will be delayed. Provisions for implementing attendance through a fingerprint machine have only been carried out for all members within the Indonesian National Armed Forces Headquarters Personnel Service (TNI Headquarters) both for those with status as members and civil servants.

II. THEORETICAL BASIS

1. PERFORMANCE

A. Definition of Performance

Performance is the result of work that can be achieved by a person or group of people in an agency in accordance with their respective authorities and responsibilities in an effort to achieve organizational goals illegally, not violating the law and not contradicting morals and ethics. Utami and Waluyo, (2017) reveals the performance of members is the ability of members to do something certain expertise. Kartika and Sugiarto, (2016) performance refers to the achievement of the goals of members of the tasks assigned to them. Erri, Lestari, & Asymar, (2021) performance is defined as the result of an evaluation of the work performed.

B. Purpose of Performance Assessment

The objectives of the work performance of members are as follows:

1. Management of human resources owned to achieve organizational goals.
2. Regarding the direction of the agency in general.
3. An aspiration.
4. Responsibility of each individual.
5. Help define expectations or performance targets.
6. Develop a framework for supervisors.
7. Related to certain achievements within a certain period of time.
8. As a tool to assist and encourage employees to take initiatives in order to improve performance.
9. It is broad in nature.

Hangga and Mayasari, (2015) states that performance appraisal or often called performance evaluation is a method and process of evaluating the implementation of the duties of a person, group of people, units, work in an organization or agency in accordance with performance standards or goals that are applied first.

C. Performance Improvement Efforts

According to Pratiwi, (2012) organizational goals can be achieved if the organization is supported by the work units contained therein. Efforts that can be made to improve data performance are carried out in ways as presented in table 2.1

Table 1. Member Performance Improvement Efforts

No	Effort	Explanation
1	Giving Hope	In general, members who have high performance expect various recognitions from agencies, both in terms of material, social, internal, and certain career paths according to ability.
2	Development	Efforts to improve member performance can also be designed in a member development scheme according to member performance. Members who produce high performance can be promoted according to the needs of the position.
3	Communication	Superiors are responsible for evaluating members' performance and regularly communicate the assessments being made.

D. Performance Indicator

Kristiyanti, (2012); John, (2019) states that measuring the results of work on the tasks that have been given to members must have an assessment of these members. The assessment includes the following:

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1. Work quality

Demonstrate neatness, accuracy, relevance of work results without ignoring the volume of work. Good quality work can avoid error rates in completing work which can be beneficial for the progress of the agency. The indicators are neatness, ability, and success.

2. Working quantity

Shows the large number of types of work carried out at one time so that efficiency and effectiveness can be carried out in accordance with agency goals. The indicators are speed and satisfaction.

3. Responsibility

Shows how big the members are in receiving and carrying out their work, being accountable for work results and the facilities and infrastructure used and their work behavior every day. The indicators are work results, decision making, facilities and infrastructure.

4. Cooperation

Willingness of members to participate with other members vertically and horizontally both inside and outside of work so that work results will be better. The indicators are cohesiveness and good relations with colleagues and superiors.

5. Initiative

Initiative from within members of the agency to carry out work and nature of work without waiting for orders from superiors or showing responsibility in work that is already the responsibility of a member. The indicator is independence.

2. Effectiveness

A. Definition of Effectiveness

Effectiveness is a communication that goes through a certain process, in a structured manner, namely the achievement of predetermined goals or objectives. With a budgeted cost, a set time and a predetermined number of people. If these provisions run smoothly, then the planned goals will be achieved as desired. According to Rahadian and Kencana, (2018) Work effectiveness is a condition in which physical and spiritual activities carried out by humans can achieve the desired results. Pahmawati, Darna, and Herlina, (2021) mentioning work effectiveness means the completion of work on time as previously determined.

According to Mustafid, (2017) work effectiveness is a measure of the achievement of a task or goal. Rabius Tsani and Nurleli, (2021) said work effectiveness is a measure in measuring agency effectiveness through several approaches whose results can be seen from the level of achievement of agency objectives. So according to the author work effectiveness is a measure in the completion of work achievements that have been determined in accordance with the procedures and objectives of the agency.

According to Sapitri and Pancasila, (2022) based on some of the definitions described above, it can be concluded that effectiveness is an activity or activities in order to achieve the initial goals or objectives that have been determined previously and contain several important elements, namely:

1. Achievement of goals,

An activity is said to be effective if it can achieve the goals or objectives that have been previously set.

2. Punctuality,

An activity is said to be effective if these activities can be carried out and completed on time.

3. Benefits,

There are benefits that are felt by the service user community around them.

4. Result,

An activity is said to be effective if it produces results in accordance with the expectations of society.

B. Approach To Effectiveness

According to Wow, (2022) that there is a separate approach to support work effectiveness in a new culture, people need to have sufficient knowledge and understanding of the other culture and the ability to demonstrate appropriate behavior. Activities and internal processes that occur within the agency change inputs into outputs or programs which are then thrown back into the environment.

The approach to effectiveness consists of:

1. Target Approach

This approach tries to regulate the extent to which an agency succeeds in realizing the goals to be achieved. The target approach in measuring effectiveness begins with identifying organizational goals and measuring the level of success of the organization in achieving these goals. The targets that need to be considered in measuring this effectiveness are realistic targets to provide maximum results based on official targets taking into account the problems that arise.

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2. Source Approach

The source approach measures effectiveness through the success of an agency in obtaining the various kinds of sources it needs. An organization must be able to obtain a variety of sources as well as maintain conditions and systems in order to be effective.

3. Process Approach

The process approach considers effectiveness as a definition and state of health of an organization. In an effective organization, internal processes run smoothly where the activities of the existing parts run in a coordinated manner.

C. Indicators – Effectiveness Indicators

Solar, (2017) states that there are five forms that can affect organizational effectiveness, including:

1. Clarity of Purpose

It is very important to formulate goals clearly because they will be used as a benchmark for forming an organization. These goals can give birth to various kinds of functions and these functions can strengthen the organization and provide focus for organizational activities to achieve the desired results properly.

2. Purpose of Using Finger Print

The purpose of using the finger print as an attendance machine to increase the productivity of members of the organization begins with discipline over the presence of members in the workplace.

3. Work Discipline

A. Defenition of Work Discipline

According to Ferawati, (2017) Discipline is every individual and group that guarantees obedience to "orders" and takes the initiative to take the necessary actions if there are no "orders". Saleh and Utomo, (2018) mentions work discipline is a tool used by leaders to communicate with members so that they are willing to change behavior following the rules of the game that have been set. Muslim et al., (2019) Discipline is the willingness of someone who arises with his own awareness to follow the rules that apply in the organization. According toJufrizen and Sitorus, (2021) work is an activity carried out by someone who gets a positive value from this activity. Work is defined as the process of creating or establishing new values in a unit of work resources, changing or changing values in a unit of tools to fulfill existing needs.

According toFaslah and Savitri, (2017) Discipline is a person's behavior in accordance with regulations, existing work procedures or discipline is attitudes, behavior, and actions that comply with organizational regulations, both written and unwritten. Discipline is a person's awareness and willingness to comply with all applicable agency regulations and social norms.

B. Discipline Goals

Discipline goals according to Arianto, (2013)ensure that the behavior of members is consistent with the rules set by the organization. The purpose of work discipline is as follows:

1. So that members comply with all labor regulations and policies both in writing, and carry out management orders.
2. Able to carry out as well as possible and be able to provide maximum service to certain parties with an interest in agencies in accordance with the field of work assigned to them.
3. Able to use and maintain the facilities and infrastructure of goods and agency services as well as possible.
4. Able to act and behave in accordance with the norms that apply to the agency.
5. Members are able to produce high productivity according to agency expectations, both in the short term and in the long term.

According to Susie, (2016)that the purpose of work discipline as follows:

1. The members' high sense of concern for the achievement of agency goals
2. High enthusiasm and enthusiasm for work and initiative of employees to carry out work
3. Great sense of responsibility to members to carry out their duties as well as possible
4. The development of a sense of belonging and a high sense of solidarity among members
5. Increased work efficiency and productivity for employees

C. Types of Work Discipline

The type of discipline conveyedKomala and Sinulan, (2018) Discipline is divided into two forms of work discipline, namely preventive discipline and corrective discipline. Preventive discipline is an effort to move members to follow and comply with work guidelines, rules outlined by agencies. Corrective discipline is an effort to move members to unite a rule and direct them to comply with the rules in accordance with the guidelines that apply to agencies or organizations.

D. Work Discipline Approach

There are three forms of disciplinary approach according toMuhammad (2019), namely modern discipline, discipline with tradition and discipline with purpose. The modern disciplinary approach is an approach that brings together a number of new needs or

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needs outside of punishment. The traditional approach is by giving punishment. Finally, the disciplinary approach has the aim that if it is applied with the hope that it is not only giving punishment but is more of a coaching nature.

4. Commitment

A. Definition of Work Commitment

Work commitment according Princess, (2020) is the force that binds individuals to take action towards one or more organizational goals. Hariani, et al, (2019) says that individuals are committed to carrying out specific actions or behaviors based on moral beliefs rather than personal gain.

Rizqina, et al, (2017) said work commitment as partisanship and loyalty of members to the organization and organizational goals. Chandra, et al, 2017) defines work commitment as an attitude that reflects the feelings of like or dislike of members towards the organization. Waluyo, (2022) Defining work commitment is a condition of members of the organization who are bound by their activities and beliefs, while their function is to maintain their activities and involvement in the organization. Others, however, state that work commitment includes member pride, member loyalty and member will to the organization. Based on the series of definitions of work commitment above, it can be concluded that work commitment is an attitude or behavior of members related to the strong desire of a member of the organization.

B. Aspects of Work Commitment

Christover and Ie, (2021) mentions that there are three aspects that characterize work commitment, including: affective commitment, this aspect is the emotional feelings and beliefs of members. Continuing commitment, this aspect is related to the economic value that a member gets, which means that someone chooses to stay in an agency because it gets certain benefits, compared to the member leaving or moving to another agency. Normative commitment, this aspect relates to the desire to stay with the organization for moral or ethical reasons.

C. Factors Affecting Work Commitment

Marsidi and Latip, (2017) mentioned that there are seven factors that can affect the work commitment of members, namely: work-related factors, opportunities for members, individual characteristics, work environment, positive relationships, organizational structure, management style.

III. RESEARCH METHODS

This research design is quantitative, namely research that has a hypothesis in which statistical tools are needed to prove this hypothesis. This type of research is causal comparative using three independent variables and one dependent variable. The results of the influence between the variables studied will be explained in more depth so that this type of research is explanatory / explanation.

According to Sugiyono (2009) explanatory research is research that aims to find out and explain the relationship between two or more variables, looking for the influence of a causal relationship between the independent variables (variables that influence) and the dependent variable (variables that are influenced). The scope of this research is in the field of Human Resource Management (MSDM) with a focus on knowing the effect of the effectiveness of attendance, discipline and commitment to the performance of members at the Jakarta TNI Headquarters Personnel Service.

In this study there are independent variables and dependent variables. As for these variables:

- a. dependent variable: Member Performance (Y)
- b. independent variable: Effectiveness (X)₁
Discipline (X)₂
Commitment (X)₃

The type of data used is quantitative data. Quantitative data, namely questionnaire data converted into tangible numbers (Umar, 2003). The data used in this study are primary data and secondary data. Primary data was obtained from distributing questionnaires to respondents where questions were provided by the researcher first. Meanwhile, secondary data used to support primary data is in the form of administrative data obtained from documents at the Jakarta TNI Headquarters Personnel Service.

The instrument used in this study was a questionnaire, which was arranged in the form of a statement sentence. Respondents are kindly asked to fill in the list of statements with the answers provided by marking (v) in the box provided. Respondent's choice explained that when choosing:

- a. Score 5 for SS answer choices (strongly agree)
- b. Score 4 for answer choice S (agree)
- c. Score 3 for answer choice N (neutral)

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- d. Score 2 for TS answer choices (disagree)
- e. Score 1 for the STS answer choice (strongly disagree)

Table 2. Variables, Indicators and Question Items

No	Variable	Indicator	Question Items
1	Effectiveness (X1)	Achievement of organizational targets	The application of finger print attendance has led to organizational goals, namely to increase member attendance
		Adaptability	Members easily adjust to changes in attendance from manual to finger print attendance
		Facility	Availability of facilities that support the work of members Responsibility for existing facilities
2	Discipline (X2)	Obey the rules of time	Accuracy of working hours
		Able to carry out tasks with full responsibility	Carry out tasks with full responsibility
		Able to maintain facilities and infrastructure of goods and services	Maintain goods and services facilities and infrastructure properly
3	Commitment (X3)	Responsibilities and duties assigned to members	Responsibilities and duties assigned to members
		Member loyalty to performance	Member loyalty to performance
4	Performance (Y)	Quality	Implementation of work and reporting can be completed in accordance with good quality
		Quantity	Number of jobs completed
		Responsibility	Work results are on target
		Cooperation	Cohesiveness and good relations with colleagues and superiors.
		initiative	Independent in carrying out work without waiting for orders from superiors

The instrument is said to be valid if the instrument is able to measure what is desired and can capture data from the variables that are written correctly. The level of instrument validity indicates the extent to which the collected data does not deviate from the description of what is meant. In this study, the validity test was carried out using a correlation approach pearson's product moment model, that is, correlating the scores of items from $\alpha = 0.05$ (5%), it means that the questionnaire has high validity or validity, that is, the questions in the questionnaire can measure the measuring function as desired.

To measure the validity using product moment correlation analysis (pearson correlation). The validity of research questions can be tested by looking for the significance of the correlation coefficient (r) of each question item to the total questions as a whole compared to the degree of confidence at the level $\alpha = 0.05$

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{n(\sum x^2) - (\sum x)^2} \sqrt{n(\sum Y^2) - (\sum y)^2}}$$

Where:

- r = Correlation coefficient product moment
- X = Item score

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- Y = Total score
- n = Number of respondents

If the sig. (2-tailed) $r < 0.05$ or r count \geq r table means that the research question items are able to measure company problems/valid. The value of r table with an error rate of 5% and the number of observations of 30 units of analysis is 0.349.

The reliability test is used to test the extent to which the instrument can give relatively similar results and can be re-measured on the same subject. A good measuring tool does not vary in measurement, meaning that even if this tool is used many times it will give almost the same results (Arikunto, 2008). In this study, the reliability test was carried out using the Alpha Cronbach approach. The criterion is if Cronbach's Alpha value > 0.60 it is said that the questionnaire has high reliability Ghozali (2007).

$$r = \frac{k}{k - 1} \left(\frac{1 - \sum \sigma_i^2}{\sigma^2} \right)$$

- r = reliability coefficient
- K = Number of questions
- σ_i^2 = Variant of the number of item scores
- σ^2 = Variants of total item scores

If the Alpha Cronbach value > 0.6 , then the research question items are still reliable.

IV. RESEARCH RESULTS AND DISCUSSION

A. Research result

The results of the validity test on the 14 statement items that measure the variables of Effectiveness, work discipline, Commitment and member performance are as follows:

Table 1. Validity Test Results

Variable	items	Correlation coefficient	r. Table	Sig.	Information
Effectiveness (X1)	X1.1	.778**	0.223	.000	VALID
	X1.2	.811**	0.223	.000	VALID
	X1.3	.774**	0.223	.000	VALID
	X1.4	.774**	0.223	.000	VALID
Work discipline (X2)	X2.1	.470**	0.223	.000	VALID
	X2.2	.510**	0.223	.000	VALID
	X2.3	.709**	0.223	.000	VALID
Commitment (X3)	X3.1	.795**	0.223	.000	VALID
	X3.2	.807**	0.223	.000	VALID
Performance (Y)	Y1.1	.812**	0.223	.000	VALID
	Y1.2	.414**	0.223	.000	VALID
	Y1.3	.577**	0.223	.000	VALID
	Y1.4	.387**	0.223	.000	VALID
	Y1.5	.806**	0.223	.000	VALID

Source: data processed in 2022

The test results above show that the r -count value for the 14 statement items obtains a value below the r -table value (0.233) or the probability value (sig. 2-tailed) for the 14 questionnaire items produces a probability value below the number 0.05. The comparison shows that the respondents understand the 14 items in the questionnaire submitted by the researcher. Thus all the questionnaire items in this study were declared valid.

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In addition to the validity test, each item of the research questionnaire/instrument for each variable is expected to be answered consistently/reliably by the respondent.

A variable is said to be reliable if the Cronbach's Alpha value obtained from the calculation results exceeds or is greater than the specified cut-off of 0.6

Table 2. Reliability Test Results

Variable	Alpha Cronbach	R table	information
Effectiveness (X1)	0.820	0.6	Reliable
Work discipline (X2)	0.724	0.6	Reliable
Commitment (X3)	0.736	0.6	Reliable
Member Performance (Y)	0.737	0.6	Reliable

Source: data processed in 2022

The level of understanding / validity of the respondents to the questionnaire items, a validity test was carried out. In addition, researchers also want to know the level of consistency of respondents' answers to what has been asked. To find out the consistency of the respondents in answering the questionnaire items, a reliability test was carried out. Below are the results of testing the validity and reliability using the SPSS 25.0 program, summarized in the following table:

1. Validity Test Results

The results of the validity test on the 15 statement items that measure the variables of work ability, motivation, work productivity and personnel performance are as follows:

Table 3. Validity Test Results

Variable	items	Correlation coefficient	r. Table	Sig.	Information
Workability (X1)	X1.1	.916**	0.233	.000	VALID
	X1.2	.916**	0.233	.000	VALID
	X1.3	.447**	0.233	.000	VALID
Motivation (X2)	X2.1	.923**	0.233	.000	VALID
	X2.2	.789**	0.233	.000	VALID
	X2.3	.703**	0.233	.000	VALID
	X2.4	.695**	0.233	.000	VALID
Work productivity(X3)	X3.1	.940**	0.233	.000	VALID
	X3.2	.940**	0.233	.000	VALID
	X3.3	.311**	0.233	.000	VALID
Performance (Y)	Y1.1	.533**	0.233	.000	VALID
	Y1.2	.438**	0.233	.000	VALID
	Y1.3	.510**	0.233	.000	VALID
	Y1.4	.775**	0.233	.000	VALID
	Y1.5	.775**	0.233	.000	VALID

Source: data processed in 2022

The test results above show that Cronbach's Alpha values for the four variables studied which represent the 18 items in the research questionnaire produce values that are still below the cut-off number (0.6). This comparison shows that the respondents were consistent in answering the 14 questionnaire items submitted by the researcher. Thus all the items in the questionnaire in this study were declared reliable.

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B. Discussion

The effectiveness of members of the Jakarta TNI Headquarters Personnel Service. 4 indicators are measured, namely equality, justice (equity), loyalty or loyalty and accountability or accountability. For indicators of equality, most respondents tend to strongly agree that members give equal treatment to their colleagues. This shows that members of the Jakarta TNI Headquarters Personnel Service. provide quality services to all parties regardless of social status.(Rahadian and Kencana, 2018).

For the equity indicator, that is, members have a fair attitude, it is shown that most respondents tend to agree in choosing the statement of members of the Jakarta TNI Headquarters Personnel Service. For loyalty indicators, namely loyal members to the leadership of the Jakarta TNI Headquarters Personnel Office. It is shown that most respondents tend to agree in choosing the statement that members have a sense of loyalty to the Jakarta TNI Headquarters Personnel Office.(Susie, 2016).

For accountability indicators, namely members must be ready to accept responsibility for whatever they do, it is shown that most respondents tend to agree in choosing the statement that members complete their tasks properly and are full of responsibility. The results of the analysis of the description of Effectiveness found that the Effectiveness of members of the Jakarta TNI Headquarters Personnel Service. affect the performance of members, it takes the effectiveness of members.(Apostle, 2009).

Work discipline of members of the Jakarta TNI Headquarters Personnel Service. measured by 3 indicators, namely obeying the rules of time, being able to carry out tasks with full responsibility and being able to maintain facilities and infrastructure for goods and services. For indicators of adherence to time rules, namely the accuracy of working hours, it was shown that most respondents tended to strongly agree in choosing the statement of members of the Jakarta TNI Headquarters Personnel Service. members working hours, (Muslim et al., 2019).

Commitment of members of the Jakarta TNI Headquarters Personnel Service. measured by 2 indicators namely responsibilities and tasks assigned to members and physical environmental factors. For indicators of responsibilities and tasks given to members, namely members. Responsibilities and tasks given to members of adequate work support show that most respondents tend to agree in choosing the member's statement of responsibilities and tasks given to members of adequate work support.(Princess, 2020). For indicators of physical environmental factors, namely trust among members and a harmonious work atmosphere, it is shown that most respondents tend to agree in choosing the expression of trust among members and a harmonious work atmosphere. The results of the analysis of the description of Commitment found that Commitment is a member of the Jakarta TNI Headquarters Personnel Service. affect the performance of members will be committed to work.(Hariani et al., 2019).

Performance of members of the Jakarta TNI Headquarters Personnel Service. measured by 5 indicators namely quality of work, quantity of work, responsibility, cooperation and initiative. For indicators of work quality, namely being able to maximize their ability to work, it was shown that most respondents tended to agree that members were able to maximize their ability to work at the Jakarta TNI Headquarters Personnel Service. (Wau, 2022).

The quantity of work indicator, namely being able to work in accordance with procedures, shows that most respondents tend to agree in choosing the statement that members are able to work in accordance with the procedures set by the Jakarta TNI Headquarters Personnel Service. For the indicator of responsibility, namely that it has become my responsibility to complete the work, it is shown that most respondents tend to agree that it is my responsibility to complete the work.(Christover & Ie, 2021).

For the cooperation indicator, namely having a good cooperative relationship with co-workers, it is shown that most respondents tend to agree in choosing the statement that members have a good cooperative relationship with co-workers at the Jakarta TNI Headquarters Personnel Service. For initiative indicators, namely always working independently and automatically, it is shown that most respondents tend to agree to choose the statement that members always work independently and automatically without supervision.(Faslah and Savitri, 2017).

The results of the analysis of the description of performance found that the performance of members of the Jakarta TNI Headquarters Personnel Service. able to complete the work in a timely manner in accordance with the targets and conditions imposed.

V. CONCLUSIONS

This study explains the effect of effectiveness, work discipline and commitment on the performance of members of the Jakarta TNI Headquarters Personnel Service, where the results of the research conclusions are presented below. Based on the purpose of the problem, the conclusions of this study are:

1. Members of the Personnel Service of the Indonesian Armed Forces Jakarta Headquarters responded positively to the effectiveness of work. The work discipline of members obeying the rules of time found that the accuracy of working hours can lead to work discipline Member commitment found that physical and physical environmental factors can increase member

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commitment to work. The performance of members of the Jakarta TNI Headquarters Personnel Service found quality of work and quantity of work capable of completing work on time in accordance with applicable rules and regulations.

2. The results of the study show that effectiveness, work discipline, and commitment to the performance of members of the Jakarta TNI Headquarters Personnel Service. Effectiveness, work discipline and commitment in responding quickly to instructions have a positive impact on the performance of members to complete work on time.

3. Member work effectiveness is a symptom that is measured by the most dominant and most influential member performance. Thus the increase in the performance of members of the Jakarta TNI Headquarters Personnel Service is greatly influenced by the quality of work, quantity of work and commitment.

REFERENCES

- 1) Arianto, And (2013). The Influence Of Discipline, Work Environment And Work Culture On Teaching Performance. *Economic Journal*; Vol 9, No 2: October 2013do - 10.21831/Economia.V9i2.1809. Taken From <https://journal.uny.ac.id/index.php/economia/article/view/1809>
- 2) Chandra, Do, Hubeis, Avs, & Sukandar, D. (2017). Work Satisfaction Of Generation X And Generation Y On Work Commitment At Bank Mandiri Palembang. *Journal Of Business And Management Applications (Jabm)*, 3(1 Se-Articles), 12. <https://doi.org/10.17358/Jabm.3.1.12>
- 3) Christover, G., & Ie, M. (2021). The Effect Of Job Stress And Job Satisfaction On Organizational Commitment. *Journal Of Managerial And Entrepreneurship*, 3(4), 999–1008. <https://doi.org/10.24912/Jmk.V3i4.13473>
- 4) Erri, D., Lestari, A., & Asymar, H. (2021). The Influence Of Leadership Style On Employee Performance At Pt Melzer Global Sejahtera, Jakarta. *Journal Of Research Innovation*, 1(9 Se-Articles). <https://doi.org/10.47492/Jip.V1i9.348>
- 5) Faslah, R., & Savitri, Mt (2017). The Influence Of Work Motivation And Work Discipline On Work Productivity At Employees Of Pt. Kabelindo Murni, Tbk. *Journal Of Economics And Business Education (Jpeb)*, 1(2 Se-Articles). <https://doi.org/10.21009/Jpeb.001.2.3>
- 6) Ferawati, A. (2017). The Effect Of Work Environment And Work Discipline On Employee Performance. *Agora*, 5(1). Retrieved From <https://publication.petra.ac.id/index.php/management-business/article/view/5321>
- 7) Hangga, Ir, & Mayasari, M. (2015). The Effect Of Performance Appraisal On Employee Performance With Motivation As A Moderating Variable. *Journal Of Accounting, Economics And Business Management*, 3(2), 164–170. <https://doi.org/10.30871/Jaemb.V3i2.172>
- 8) Hariani, M., Arifin, S., & Putra, Ar (2019). The Effect Of Organizational Climate, Work Experience And Work Motivation On Employee Commitment. *Management & Accounting Research Journal*, 3(2). Taken From <https://stieus.ejournal.web.id/index.php/stieus/article/view/199>
- 9) Hussein, Omar. 2003, *Organizational Behavior Research Methods*. Jakarta : Pt Gramedia Pustaka Utama
- 10) Jufrizen, J., & Sitorus, Ts (2021). The Effect Of Work Motivation And Job Satisfaction On Performance With Work Discipline As Intervening Variables. *National Seminar On Social Educational Technology And Humanities*, 1(1 Se-Articles), 844–859. <https://doi.org/10.53695/Syntesa.V1i1.419>
- 11) Kartika, Ln, & Sugiarto, A. (2016). The Effect Of Competency Level On The Performance Of Office Administration Employees. *Journal Of Economics And Business*, 17(1 Se-Articles), 73–90. <https://doi.org/10.24914/Jeb.V17i1.240>
- 12) Komala Ayu, D., & Sinaulan, Jh (2018). The Effect Of Incentives And Work Discipline On Employee Performance At Pt Bintang Satoe Doea. *Journal Of Economics*, 20(3), 373–382. <https://doi.org/10.37721/Je.V20i3.484>
- 13) Kristiyanti, M. (2012). The Role Of Performance Indicators In Measuring Management Performance. *Informatika Scientific Magazine*, 3(3). Retrieved From <https://www.unaki.ac.id/ejournal/index.php/majalah-ilmiah-informatika/article/view/79>
- 14) Mahmud, A. (2019). The Role Of Leadership In Improving Employee Work Discipline At The Gandus District Office, Palembang City. *Journal Of Administrative Science And Policy Studies (Jiask)*, 1(2 Se-Articles). <https://doi.org/10.48093/Jiask.V1i2.12>
- 15) Marsidi, A., & Abdul Latip, H. (2017). Factors Affecting Employee Commitment In Lay Organizations. *Journal Of Humanity*, 5(2 Se-Articles). Taken From <https://jurnalkehumanan.utm.my/index.php/kehumanan/article/view/176>
- 16) Muslim, A., Ansori, Bi, Usman, M., Akbar, Sa, Rafsanjani, Kes Munawir, M., ... Putri, Z. (2019). The Influence Of Work Discipline And Motivation On Employee Performance. *Usm National Seminar Proceedings*, 2(1), 134–147. <https://doi.org/10.5281/Zenodo.1036809>

Analysis of the Effectiveness of Attendance Presentation, Discipline and Commitment Effectiveness on Member Performance at the Personnel Service of the Indonesian Armed Forces

- 17) Mustafid, H. (2017). Performance Improvement Of State Civil Apparatus Through Organizational Culture. *Tarbawi: Educational Management Scientific Journal*, 3(01 Se-Original Research Article), 1–14.
<https://doi.org/10.32678/Tarbawi.V3i01.1775>
- 18) Nani, A., & Wijaya, Aa (2020). Effectiveness Of Implementing Finger Print Absence On Employee Discipline In Sorawolio District Office, Baubau City. *Journal Of Governance Studies*, 1(1 Se-Articles). <https://doi.org/10.35326/Jsip.V1i1.524>
- 19) Nugroho, Ad (2015). The Effect Of Reward And Punishment On Employee Performance At Pt Business Training And Empowering Management Surabaya. *Maksipreneur Journal: Management, Cooperatives, And Entrepreneurship*; Vol 4, No 2 (2015)Do - 10.30588/Jmp.V4i2.100 . Retrieved From
<https://ejournal.up45.ac.id/index.php/maksipreneur/article/view/100>
- 20) Pahmawati, R., Darna, N., & Herlina, E. (2021). The Influence Of Work Ethics And Counseling On Employee Work Effectiveness (A Study At The Office Of The Population And Civil Registration Office Of Ciamis Regency). *Business Management And Entrepreneurship Journal*, 2(4), 1–12. Retrieved From
<https://jurnal.unigal.ac.id/bmej/article/view/2499>
- 21) Pratiwi, P. (2012). The Effect Of Organizational Culture And Empowerment On Organizational Commitment In Improving Performance. *Asset Scientific Journal*, 14(1), 41–52. Retrieved From
<https://journal.widyamangala.ac.id/index.php/jurnalaset/article/view/88>
- 22) Putri, Fi (2020). The Relationship Between Work Motivation And Employee Commitment In Social Education And Training Centers. *Journal Of Education Management Materials*, 2(1), 220–232. <https://doi.org/10.24036/Bmp.V2i1.3756>
- 23) Rabius Tsani, A., & Nurleli. (2021). Analysis Of The Implementation Of Total Quality Management And Organizational Commitment In Improving Company Performance. *Journal Of Accounting Research*, 1(1), 30–37.
<https://doi.org/10.29313/Jra.V1i1.55>
- 24) Rahadian, Ah, & Kencana, M. (2018). The Effect Of Discipline And Employee Motivation On The Effectiveness Of Natural Disaster Management In Sukamakmur District, Bogor Regency. *Transparency : Scientific Journal Of Administrative Sciences*, 8(2), 185–207. <https://doi.org/10.31334/Trans.V8i2.71>
- 25) Apostle, S. (2009). Implementation Of Good Governance In Indonesia In The Prevention Of Corruption Crimes. *Law Forum - Faculty Of Law, Gadjah Mada University*, 21(3), 539–553. <https://doi.org/10.22146/Jmh.16276>
- 26) Rizqina, Za, Adam, M., & Chan, S. (2017). The Influence Of Work Culture, Ability, And Work Commitment On Employee Satisfaction And Their Impact On The Performance Of Company Agency In Free Trade Zone And Sabang Free Port (Bpks) | Rizqina | *Journal Of Master Of Management. Jmm: Feb-Unsyiah Master Of Management Journal*, 1(1). Retrieved From
<https://jurnal.usk.ac.id/jmm/article/view/9267>
- 27) Saleh, Ar, & Utomo, H. (2018). The Influence Of Work Discipline, Work Motivation, Work Ethos And Work Environment On The Work Productivity Of Employees In The Production Section At Pt. Inko Java Semarang. *Among Makarti*, 11(1).
<https://doi.org/10.52353/Ama.V11i1.160>
- 28) Sapitri, D., & Pancasasti, R. (2022). Moderation Effects Of Organizational Culture For Improving Employee Performance. *Technomedia Journal*, 6(February 2), 252–262. <https://doi.org/10.33050/Tmj.V6i2.1756>
- 29) Sola, E. (2017). A Reflection: Leadership Work Effectiveness. *Idaarah: Journal Of Education Management*, 1(2), 2017. <https://doi.org/10.24252/Idaarah.V1i2.4267>
- 30) Sugiyono. 2010. *Administration Research Methods*. Bandung : Alfabeta
- 31) Susi, Y. (2016). Indicators Of Employee Discipline At The Current Hotel In Pontianak. *Bis-Ma (Business Management)*, 1(6). Retrieved From <https://journal.widyadharma.ac.id/index.php/bisma/article/view/334>
- 32) Cape, H. (2015). The Effect Of Work Discipline And Work Motivation On Employee Achievement In Social Services And Labor In Medan City. *Scientific Journal Of Management And Business*, 15(1), 1693–7619.
<https://doi.org/10.30596/Jimb.V15i1.964>
- 33) Utami, As, & Waluyo, Hd (2017). The Effect Of Organizational Culture, Motivation And Work Discipline On Employee Performance At Ksp Lohjinawe. *Journal Of Business Administration*;; 6(3), 465–473.
<https://doi.org/https://doi.org/10.14710/Jiab.2017.16759>
- 34) Waluyo, B. (2022). Management Of Efforts To Improve Teacher's Work Commitment. *Jurnal An-Nur: Educational And Islamic Studies*, 8(01). Retrieved From <https://www.jurnal.an-nur.ac.id/index.php/annur/article/view/166>
- 35) Wau, A. (2022). The Effect Of Work Motivation And Work Effectiveness On Work Productivity With Work Quality As Intervening Variables. *Journal Of Accounting, Management And Economics*, 1(1 Se-), Pages 37-47.
<https://doi.org/10.56248/Jamane.V1i1.11>

Analysis of the Effectiveness of Attendance Presentation, Discipline and Commitment Effectiveness on Member Performance at the Personnel Service of the Indonesian Armed Forces

- 36) Yahya, A. (2019). Experience Of Implementing Individual Performance Indicators For Clinical Staff Using The E-Log Book At Pertamina Cirebon Hospital. *The Journal Of Hospital Accreditation*, 1(01), 18–23. <https://doi.org/10.35727/Jha.V1i1.6>



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Moderating Role of Audit Committee's Legal Expertise on Risk Management and Financial Reporting Quality



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ABSTRACT: This study aims at examining the moderating role of audit committee's legal expertise on risk management and financial reporting quality. An ex-post facto research design was adopted and data collected from secondary sources were analysed through a structural equation modelling approach with the aid of a partial least square technique. The results revealed that the quality of financial reporting is greatly impacted by risk management. Additionally, the study revealed that the quality of financial reporting is influenced by the audit committee's legal expertise. Furthermore, the study revealed that the legal knowledge of the audit committee acts as a moderating factor, strengthening the connections between risk management and financial reporting quality. The study concludes that members of audit committees with legal expertise are more likely to exercise caution while engaging in business activities that could have legal repercussions. The likelihood that the banks may incur legal obligations is also associated with the quality of the financial reporting. The study therefore, recommends that in order to ensure investor confidence in the quality of financial reporting, regulators should keep an eye on the requirement for legal knowledge on audit committees. Professional organizations should see to it that legislation is written to safeguard investors' interests.

KEYWORDS: Default risk, litigation risk, Risk of investor distrust, Risk Management, Financial reporting quality, Moderation

INTRODUCTION

Background to the Study

Improved financial reports help organizations eliminate information inconsistencies (Chen et al., 2011). However, several circumstances, according to the agency theory, tend to diminish a manager's ability to gather relevant information for improved management activity supervision (Gomariz & Balesta, 2014). This research to investigate the determinants of financial reporting quality is based on an accounting case that occurred in Indonesia in the recent decade. The general goal of financial reports, according to Ahmed (2007) and Mendes et al. (2012) is to offer information about the fiscal budget, performance, and cash flow. Financial reporting quality is considered as an imperative concept in both developed and emerging capital markets (Mensah & Deajeon, 2013). The range of financial reporting quality is enormous and it can vary from the level of earnings management to value relevance of the financial reports (Kim & Yang, 2014). Organizations who disclose more information have opportunity to obtain some benefits such as lower capital costs, gain investor confidence, and improve marketability of their shares and the quality of the financial report is vital for the users of financial statements in order to make informed decisions on the valuation and investment (Echobu, Okika & Mailafia, 2017). Further financial reporting quality is a device which reduces the information gap in between insiders and the stakeholders. Furthermore, if management give quality financial reports, then they will be able to enhance the credibility of their reporting among stakeholders. As a result of the importance attached to quality of financial report, researchers, national accounting bodies and all other stakeholders began to turn attention to financial reports provided by corporate bodies within last few decades (Enakirerhi, Ibanichuka & Ofurum, 2020).

Financial reporting quality, according to Krishnan (2011), is one of the most critical contributors to a company's information. Its primary goal is to provide valuable information to aid in decision-making. Companies, on the other hand, tend to use a variety of accounting standards to prepare their financial statements (Choi & Pae, 2011). According to Chen et al. (2011), high-quality accounting data is a valuable tool for addressing information asymmetry.

The need for producing quality financial report has become a global phenomenon. The global financial crises of the 1930s and the recent one in 2008 necessitated the demand for unbiased financial reporting, with the accounting figures not just free of error, but also a true reflection of an organization's activities for the period being reported. Shehu (2013) observe that due to the financial crises, accounting earnings reported by corporations may be far from being relevant, reliable and effective (Olowokure,

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Tanko & Nyor, 2016). Regulators and other stakeholders place a very high premium on the veracity of financial report. The truthfulness of the report depends on the reliability of reported earnings (Klai & Omri, 2011). A major managerial function is decision making. Management takes decision on the appropriate accounting policies that underlies the preparation of financial reports. Appropriate measures and values are given to items that make up the financial statements. Management could be subjective in the way it recognizes, measure and allocate values to certain items of expenditure and revenues in the financial report.

Kwambo (2020) observes that investors give more attention to earnings in the financial reports more than other accounting information; therefore, management becomes prone to influencing accounting earnings in order to meet investors' expectations. According to Shehu (2013) due to income smoothening activities, management can manipulate certain items in the financials to achieve a desired result. Manipulation of earnings impairs on the quality of financial reports and diminishes investors' confidence (Bansal & Sharma, 2016). Earnings management is a fundamental aspect of financial reporting quality. How earnings are recognized and measured is essential to the quality of financial reporting. Corporations, through their managers are duty bound to report business activities for the benefit of shareholders, potential investors, regulators/policy makers, suppliers of finance and other stakeholders. This is usually done through the production of annual reports covering their economic, financial, environmental and social activities. These reports are expected to be high quality information, portraying a true and fair view of transactions. However, the practice of earnings management laws this process of producing quality financial reports and questions the credibility of the quality of reported earnings, (Ashafoke, Dabor & Ilaboya, 2021).

It is expected that the influx of investors into Nigeria will increase, hence the need to study the listed firms financial reporting quality, as investors depend on financial reports to make decisions (Nyor, 2013). The choice of studying Nigerian firms is predicated on the credence that the Nigerian economy have great potential for growth. On this basis, it is therefore important and equally necessary to identify the determinants of quality financial reporting amongst Nigerian firms. This paper therefore seeks to investigate the determinants of financial reporting quality with a bias for listed firms in Nigeria.

Statement of the problem

In practice, the firms' management determines what information that should be disclosed which is sometimes merely a standardized text that lacks a sufficient background or context. This invalidity of financial information has misled investors which in turn has led to wrong and harmful investment decision. One of such cases is that of the Eron Corporation. In Cameroon the issue of inadequate financial disclosure has led to collapse of firms on the Nigerian stock exchange especially the case of listed firms. Many accounting scandals and financial crises happened lately in numerous distinguished firms have undermined investors' trust concerning the financial reports and have introduced several criticisms about financial reporting quality. It has commonly been recognized that the key frustration give rise to these financial crises arisen instantly from the dearth of quality financial disclosure and insufficient governance practices.

Thus, the extensive failure in the financial disclosure has generated the demand by investors, regulators, and other stakeholders to enhance the financial information quality and to reinforce the control of managers by putting up adequate governance structures. This will allow investors to assess banks' effectiveness and to take timely correctional actions in making investment decisions. Consequently, the demand and need for sufficient transparency and high quality financial reporting, that is the truthfulness of the information disclosed by the financial reporting process is indispensable. Hence, quality of financial reporting, especially over the latest decade, has been of considerable concern to accounting researchers; however, one of the key problems is how to measure the determinants of financial reporting quality of firms. A high-quality financial report is critical for a company's success. As a result of the growth of information asymmetry, variations in managerial reports cause conflict between managers and shareholders. This also leads to mistakes, which leads to litigation, which is one of the external issues that make it difficult for managers to carry out their responsibilities. Litigation develops when existing legal and regulatory processes do not include accounting practices, as well as when operational management does not provide clear information.

The dearth of research in this area is even more evident in the measurement approach. Therefore, this paper aims to investigate the moderating role of audit committee's legal expertise on the relationship between risk management and financial reporting quality of commercial banks in Cameroon.

Objectives of the study

The main objective of the study is to examine the moderating role of audit committee's legal expertise on the relationship between risk management and financial reporting quality of commercial banks in Cameroon.

The specific objectives include to:

- 1) Ascertain the effect of risk management (litigation risk, risk of investor distrust, default risk) on financial reporting quality.
- 2) Determine the effect of audit committee's legal expertise on financial reporting quality.

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- 3) Find out how the existence of the audit committee's legal expertise strengthens the relationship between litigation risk, risk of investor distrust, default risk, and financial reporting quality.

Research Questions

The following research questions are set to be answered during the study;

- 1) What is the effect of risk management (litigation risk, risk of investor distrust, default risk) on financial reporting quality?
- 2) What is the effect of audit committee's legal expertise on financial reporting quality?
- 3) How does audit committee's legal expertise moderate the relationship between risk management (litigation risk, risk of investor distrust, default risk) and financial reporting quality?

Research Hypotheses

The following research hypotheses are set to be tested during the course of the study;

- 1) Risk management (litigation risk, risk of investor distrust, default risk) significantly affects financial reporting quality.
- 2) Audit committee's legal expertise significantly affects financial reporting quality.
- 3) Audit committee's legal expertise moderates significantly the relationship between risk management (litigation risk, risk of investor distrust, default risk) and financial reporting quality.

LITERATURE REVIEW

The quality of financial reporting is determined by the state of the business and is impacted by the funders' accounting knowledge. In compliance with the company's legal requirements, excellent financial reporting quality lowers information asymmetry between the principal and agent (Landsman et al. 2012). The audit trustees of the legal committee take prompt action to address any errors made throughout the reporting process in order to prevent future issues for the company. The audit committees have the same professional skills as corporate lawyers and frequently work well with them to resolve issues with legal repercussions. Producing accurate financial reports raises the bar for workers who prepare financial statements, claim Akgun et al. (2017). The employee taking part in the activity must comprehend how accounting is conducted in accordance with corporate policies. In order to avoid this situation and serve as a tool for evaluating the company's future fiscal strategies, accurate financial statements are essential. The real earnings model was used in this study to assess the financial statements' level of quality (Asti, 2014).

According to Soheilyfar, Tamimi, Ahmadi, and Takhtaei (2014), financial reporting quality is a report that is presented based on the state of the company and declines as a result of the funder's understanding of accounting. In compliance with the company's legal duties, excellent financial reporting quality lowers information asymmetry between the principal and agent (Sanni, Ijasini & Adamu, 2018). The corporate governance structure set up corrects any errors that arise throughout the reporting process right away to prevent causing issues for the organization. When financial reporting issues arise that have an impact on the firm's disclosure content, the audit committee is typically in charge of making the necessary modifications and has a history of working well with managers (Santoso & Fuâ, 2014). According to McNichols (2002), generating accurate financial reports raises the bar for workers who prepare financial statements. According to the established guidelines and standards imposed by the organization, the person involved in the activity must comprehend how the accounting process and practice are carried out (Mahboub, 2017). Ivanova and Bikeeva (2016) contend that accurate financial statements shield a business from situations where stated returns on investments are lower than actual returns and that would have a negative impact on the company's future investment choices. International Accounting Standard Board (IASB), as stated in Daferighe and George (2020), claims that the quality of financial reporting defines and enhances fundamental qualitative traits. The relevance and faithful depiction of the information in the financial statements are described by the IASB as fundamental qualitative qualities. As the primary features of financial reporting quality, it defines enhancing qualitative aspects as comparability, verifiability, timeliness, and understandability of financial statements (Custódio & Metzger, 2014). Financial and non-financial information that is helpful for decision-making is referred to as financial reporting quality (Asegdew, 2016).

The practice of formally disclosing a company's financial activity is known as financial reporting. For any market player, it has long been seen as a necessary resource. All involved parties, including managers, investors, regulatory bodies, society, and other stakeholders, are less mystified and have fewer disagreements over the matter. Everyone involved in this process should participate, and every action linked to it should be submitted carefully, particularly the disclosure process, all transactions, accounting principles, and all conclusions and recommendations provided by the staff members (Alqatamin, Aribi, & Arun, 2017). The quality of financial reporting and its effects on the following determinants are topics covered in great detail in the literature

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and earlier studies. For instance, Hassan and Bello (2013), Ali and Zhang (2015), and Al-Dmour (2018) find that corporate governance and earnings management are factors that affect how well a company reports its financial data..

Because the quality of the financial report ensures and forces the company to provide accurate and up-to-date information, there is less mystery and conflict in the information provided for both shareholders and stakeholders as well as other market participants interested in this report (Hambrick & Mason, 1984; Kalyta, 2009). Not simply for the creation of trustworthy financial reports, but also for the success of the company as a whole, organizational information systems' data integrity and reliability are crucial (Krishnan & Parson, 2008). According to Martin, Nishikawa, and Williams (2009), access to pertinent information, use of that information to improve management standards, and confidence that the information is correct, relevant, and secure are all crucial components of efficient financial management. Accordingly, the goal of the regulators should be to create an accounting system that offers the greatest benefits at the lowest possible costs (Zhang & Wiersema, 2009). Accounting information systems maintain and produce financial statements that contain information about accounts and their balances used by organizations to plan, evaluate, and diagnose operations and financial position (Sepasi, Deilami & Tavakoli, 2017).

According to Valipour and Moradbeygi (2011), there are additional advantages to having high-quality information from financial reporting that can help investors make decisions. They made it clear that the reduction of information risk and liquidity is guaranteed by information of a high caliber. According to other viewpoints cited in Michailesco (1999), financial reporting quality constrains managers' ability to act in their own interests and directs them to make wise investment choices. The lack of equivalence and asymmetric knowledge that result from competing agencies are lessened by high-quality financial reporting (Muinde, 2013). Additionally, by removing the uncertainty around specific events, it aids market agents in fully comprehending all corporate operations and activities (Peni & Vähämaa, 2010).

According to Osamudiamé, Nwadiakor, and Imuentinyan (2018), the accuracy of accounting information has a significant impact on how market participants perceive distribution and make decisions on the company's future cash flow. On the other hand, Ogunbade, Adekoya, and Olugbodi (2021) discover that having high-quality financial reporting has benefits for both banks and the government because it improves the investment effectiveness and financial performance of private firms, which in turn boosts tax payments and bank lending. According to Rasha (2017), the credibility of financial reporting quality is derived from its contribution to the reduction of information risk and the improvement of liquidity. However, Kythreotis (2014) emphasizes that accurate financial reporting gives customer's access to information and financial statements, both of which are essential for debt contracting. Kamolsakulchai (2015) noted that there are numerous indicators of financial reporting quality that consumers can rely on to assess the caliber of financial data and the financial statements as a whole, rather than merely looking at earnings. Because of this, experts from throughout the world have proposed a variety of variables of financial reporting quality.

The conceptual model is presented in figure 2.1.

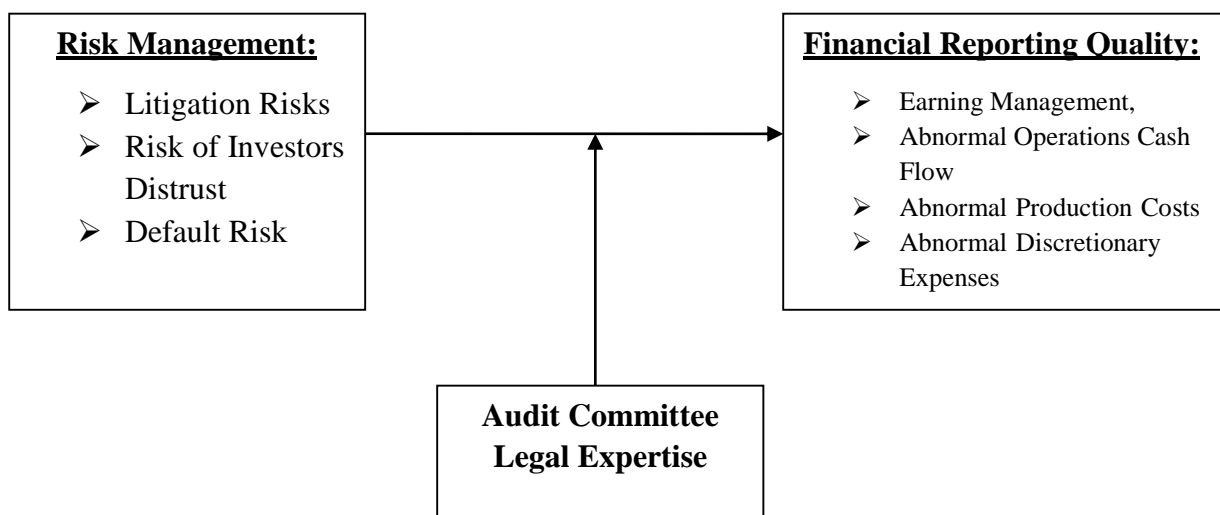


Figure 2.1: Conceptual Model

THEORETICAL REVIEW

The Signaling Theory

This theory refers to the idea that the agents send information to the principal in order to create credible relationship. Managers have more first-hand information about the firm than firm's investors do but they are always reluctant to provide transparent information to the shareholders. So, the financial characteristics of a firm can be used for information purpose and it also act as a

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signal for the firm's future projection proficiently. Information signaling model developed by Merton, Miller and Rock (1985) suggest that financial data convey information to individual and institutional investors regarding the firm's future prospects. Indeed when a company listed on the Stock Exchange makes pronouncement about its trading in regards to its financial performance, the expectations of the public especially speculators tend to rise.

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EMPIRICAL REVIEW

Litigation risk on financial reporting quality

Litigation occurs because accounting practices carried out by the company are not performed by the existing legal and regulatory provisions. It also arises as a result of hidden negative information with a potential legal risk embedded to mislead the consumers. Management cover or hide such information from interested parties it also strives to produce reports that make these parties continues to believe and be interested in the company. The management revised reports to make it appear useful to the stakeholders for the continuous injection of funds into the company. However, this worsens the report worse because the information displayed does not show the actual situation; rather it appears to be manipulated. Reports need to be in perfect condition, which is the basis of decision making, for the company to continue acquiring capitals for its operations. When the information reported appears to be too real, the management becomes concerned that the parties might not be interested in the company and does not inject funds, which leads to failure in the operation of the establishment. Management as a company agent certainly does not want this to happen, especially when the compensation given is assessed based on the results of its performance. It strives for the company to continue operation and generate profits that serve as returns for the principal (Tapang et al., 2022). Laux and Stocken (2011) also stated that the greater the expected legal penalties faced by companies, the more the management tends to be aware of their reports.

Litigation is the process whereby an individual or entity brings a dispute or case to the court for settlement of claims or replacement of damages (Juanda, 2006, Chen, 2009, Dechow, 2010, and Laux et al., 2011). Lawsuits and litigation tend to arise when the financial statements do not correspond to the actual conditions of the company, which is detrimental to the parties concerned. Litigation risk is higher once there is a decline in the quality of financial reporting (Juanda, 2006). Laux and Stocken (2011) also mentioned that the greater the expected legal penalties faced by companies, the more the management prevents it from reporting, and leading to increased misreporting. Therefore, from the above ideas, it is deduced that high litigation risk of a company results in poor financial reporting quality. Jackson et al. (2015), Cao et al. (2011), and Boone et al. (2011) established that it significantly influence financial reporting quality and help companies' objectives to be achieved by supervising the activities that caused the low-quality financial reporting.

Risk of investor distrust on financial reporting quality

The official protection of external investors is identified as a critical determinant in the development of financial markets, capital/ownership structure, and dividend policy (Anggraeni, 2010). Stocks purchased by investors, their rights are protected by laws and regulations. This tends to be weak in accordance with uncertain conditions and investor distrust. Therefore, the high risk of investor distrust leads to poor quality financial statements. Hodge (2013); Anggraini et al., (2010); Cahan et al., (2008); Ahmed et al.,(2007) stated that investor distrust affects the financial reporting quality which occurs when certain authorities, inhibit information without clarity from regulators. Companies tend to experience declines in financial reporting quality, therefore, the essence of investor protection is to encourage shareholders to invest in the capital market with promising positions, especially in terms of obtaining access to information on the market situation (Knechel & Salterio (2016).

Default risk on financial reporting quality

This research refers to prior studies conducted by Mehdi et al. (2010), Zamri et al. (2013), and Veliandina (2013), which measured the amount of default risk (the risk of company failure) by the level of leverage a company posses. Financial leverage is calculated by the ratio of debt to the total capital of the company. The results from previous studies show that the default risk negatively affects the quality of financial statements. The default risk on the amount of debt owed by a company greatly affects its performance. Therefore, when the default risk is high, the quality of the company's financial statement that was captured by investors decreases, while the management tends to utilize its earnings.

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Relationship between risk management and financial reporting quality with audit committee legal expertise

Audit committees with legal backgrounds make other members be more careful on the increased risk of litigation, which reduces the reporting quality. Legal expertise of audit committees reduces litigation risk by providing warnings and corrective measures that tend to result in legal problems. According to Krishnan et al. (2011), in recent years, there has been a significant increase in the number of legal experts appointed as company boards. Krishnan et al. conducted a study in 2011 concerning the relationship between audit committee legal expertise and financial reporting quality and discovered that the audit committee with a legal background made a positive contribution to the quality of the company's financial reporting. It has been observed that the number of legal experts appointed as the board of companies has increased in recent years, especially after the issuance of the Sarbanes Oxley Act 2002. The existence of an audit committee legal expert helps to oversee the financial reporting process and ensures that management functions effectively in order to avoid litigation threats.

The litigation, investor distrust, and default risks are expected to strengthen its relationship with the financial reporting quality by an audit committee with a law background. The research conducted by Suaryana (2005), Krishnan (2011), Laux et al. (2011), and Hodge (2013) stated that the audit committee with competent legal knowledge are wary of risk possibilities that degrades the quality of reports. Litigation risk, and investor distrust, leads to low quality report. The existence of legal experts on the audit committee reduces the effect of litigation risk on the quality of corporate financial reporting.

RESEARCH METHODS

A research design known as ex-post facto was used in this study. Ex-post facto is a methodical empirical investigation in which the scientist has no direct control over the independent variables because they cannot be artificially changed. A cross-sectional sample of ten listed banks annual reports for 10 years, ranging from 2013 to 2022 were subjected to a content analysis. Each yearly report underwent a thorough examination and evaluation. All nineteen (19) commercial banks in Cameroon made up the population. The top ten (10) commercial banks made up the sample size in order to benefit from an in-depth analysis and thorough coverage (See Table 1). The decision was made in light of the requirement that banks start operations in 2013. The annual audited reports served as the secondary source of data.

Table 1: List of banks in Cameroon

POPULATION		SAMPLE	
1	Access Bank Cameroon	1	Afriland First Bank
2	Afriland First Bank	2	Societe Generale des Banques au Cameroun (SGBC)
3	Atlantic Bank Cameroon	3	Banque International du Cameroun pour l'Epargne et le Cr�dit (BICEC)
4	Banque International du Cameroun pour l'Epargne et le Cr�dit (BICEC)	4	SCB Cameroun
5	Banque Camerounaise des Petites et Moyennes Entreprises (BC-PME SA)	5	Commercial Bank of Cameroon
6	BGFI Bank Cameroon	6	United Bank for Africa (UBA)
7	SCB Cameroun	7	Ecobank Cameroon - Acquired Oceanic Bank Cameroon
8	Cr�dit Communautaire d'Afrique Bank (CCA Bank)	8	Citibank
9	Citibank	9	Atlantic Bank Cameroon
10	Commercial Bank of Cameroon	10	Union Bank of Cameroon (UBC)
11	Ecobank Cameroon - Acquired Oceanic Bank Cameroon		
12	National Financial Credit Bank (NFCB)		
13	Soci�t� Commerciale de Banque du Cameroun - (Formerly SCB Credit Agricole)		
14	Wineex Bank Cameroon (WBC)		
15	Societe Generale des Banques au Cameroun (SGBC)		
16	Standard Chartered Bank		
17	Union Bank of Cameroon (UBC)		
18	United Bank for Africa (UBA)		
19	Attijari Securities Central Africa (ASCA)		

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Validity and Reliability of the Instruments

The study employed Composite Reliability (CR) and Cronbach's Alpha to assess the constructs' reliability. The threshold value of 0.70 was used to compare all composite reliabilities (Wasko & Faraj, 2005). Each construct whose Cronbach's Alpha exceeded the benchmark of 0.70 was chosen (Sekaran & Bougie, 2013). If the Average Variance Extracted (AVE) is greater than the advised 0.50, convergent validity is considered satisfactory. The Fornell Larcker Criterion was also used to evaluate the discriminant validity of the test. The Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015) was used to further evaluate the discriminant validity, and values were compared to the benchmark of 0.90.

Table 2: Reliability and Validity Test

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
ACLE	0.862	0.906	0.667
RM	0.929	0.938	0.509
FRQ	0.756	0.84	0.528

Table 3: Discriminant Validity - Fornell Larcker Criterion

	ACLE	RM	FRQ
ACLE	0.817		
RM	0.585	0.714	
FRQ	0.362	0.431	0.727

Table 4: Discriminant Validity - Heterotriat Monotriat Ratio (HTMT)

	ACLE	RM	FRQ
ACLE			
RM	0.658		
FRQ	0.415	0.466	

Model specification

In this work, structural equation modeling (SEM) was used. Both the measurement model and the structural model were acquired by the SEM. The SEM is described as follows:

$$FRQ = B_0 + B_1RM (LR, RID, DR) + u \text{ ----- (1)}$$

$$FRQ = B_0 + B_1ACLE + e_i \text{ ----- (2)}$$

$$FRQ = B_0 + B_1RM + B_2ACLE + B_3RM*ACLE + e_i \text{ ----- (3)}$$

Table 5: Operationalisation of variables

VARIABLE		CODE	PROXY	MEASUREMENT
Independent variable	Risk Management	RM	Litigation Risk (LR)	Stock Returns, Turnover Volume of Stock
			Risk of Investor Distrust (RID)	Investor Protection Index
			Default Risk (DR)	Financial leverage ratio, which compares the total debt to the total assets of the company
Dependent variable	Financial reporting Quality	FRQ	Earning Management, Abnormal Operations Cash Flow, Abnormal Production Costs, And Abnormal Discretionary Expenses	
Moderating variable	Audit Committee Legal Expertise	ACLE	Proportion, which is the number of its lawyers divided by the total number of the audit committees	

RESULTS AND DISCUSSION

Table 6: Collinearity Statistics (Inner VIF Values)

	ACLE	RM	PERF
ACLE			2.25
RM			2.25
FRQ			

In Table 6, it is suggested that the presence of a vector inflation factor (VIF) greater than 3.3 is a sign of pathological collinearity and that the model may be tainted by common method bias (CMB). As a result, the model can be said to be free of CMB if all (factor-level) VIFs obtained from a comprehensive collinearity test are equal to or lower than 3.3 (Kock, 2015). Table 6 showed that, based on the information provided above, there is no evidence of common method bias in the model because all of the values are below 3.3.

Table 7: Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
H1: RM → FRQ	0.059	0.100	0.012	4.917	0.000
H2: ACLE → FRQ	0.161	0.166	0.074	2.159	0.031
H3: ACLE*RM → FRQ	0.318	0.301	0.087	3.638	0.000

The findings of H1 demonstrated that the quality of financial reporting is greatly impacted by risk management. This finding is consistent with the works of Jackson et al. (2015), Cao et al. (2011), and Boone et al. (2011) who established that it has a significant impact on financial reporting quality and aids in the accomplishment of business goals by monitoring the activities that result in poor financial reporting. In addition, Hodge (2013), Anggraini et al. (2010), Cahan et al. (2008), and Ahmed et al. (2007) support the idea. Furthermore supported by the findings of Mehdi et al. (2010), Zamri et al. (2013), and Veliandina (2013). The outcome of H2 demonstrated that the quality of financial reporting is influenced by the audit committee's legal expertise. The findings of this study are consistent with those of Jeffrey et al.'s (2014) study, which found that members of the audit committee who are familiar with legal issues should advise management to avoid taking actions that could lower the quality of financial statements when performing their duties. This result supports the conclusions made by Krishnan et al. (2011). To prevent decline brought on by the audit committee, the board of directors' decision-making must be impartial.

The H3 results also demonstrated that the legal knowledge of the audit committee acts as a moderating factor, strengthening the connections between risk management and financial reporting quality. The findings of Krishnan et al. (2011) are supported by this result. The presence of an audit committee within a corporation allows management performance oversight and reliable reporting information. The competence of the company's audit committee is one aspect that influences how well corporate audit committees perform. The audit committee makes the management aware of the potential for this requirement by providing a legal context. The audit committee's legal counsel determines that it is imperative to take quick action to avoid legal issues that could harm the company's reputation when an error is discovered during the reporting process. In order to resolve issues with legal significance, the audit committees work with company attorneys more effectively and share the same professional skills as corporate lawyers. This is consistent with study by Krishnan et al. (2011) that found a link between the legal expertise of the audit committee and the caliber of financial reporting. The company's financial reporting is less affected by risk mitigation because it has an audit committee comprising legal expertise.

CONCLUSION AND RECOMMENDATIONS

The study comes to the conclusion that members of audit committees with legal expertise are more likely to exercise caution while engaging in business activities that could have legal repercussions. The likelihood that the bank may incur legal obligations is also correlated with the quality of the financial reporting. The study therefore, recommends the following.

- 1) In order to ensure investor confidence in the caliber of financial reporting, Cameroonian regulators should keep an eye on the requirement for legal knowledge on audit committees.
- 2) Cameroonian regulatory bodies should make sure that investors have faith in and confidence in the quality of the financial reporting.
- 3) Cameroonian professional organizations ought to see to it that legislation is written to safeguard investors' interests.

REFERENCES

- 1) Afify, H. (2009). Determinants of audit report lag: Does implementing corporate governance have any impact? Empirical evidence from Egypt. *Journal of Applied Accounting Research*, 10 (1),56-86.
- 2) Ahmed, A. (2012). Disclosure of financial reporting and firm structure as a determinant: A study on the listed companies of DSE. *ASA University Review*, 6(1),12-24.
- 3) Al-Dmour, A. (2018). The impact of the quality of financial reporting on non-financial business performance and the role of organizations demographic attributes (type, size and experience). *Academy of Accounting and Financial Studies Journal*, 22(1), 1-18.
- 4) Ali, A. & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, 59(1), 60-79.
- 5) Alqatamin, R., Aribi, Z. & Arun, T. (2017). The effect of the CEO's characteristics on earnings management: Evidence from Jordan. *International Journal of Accounting & Information Management*, 25(3), 356-375.
- 6) Amake, C. & Okafor, C. (2012). Auditors independence, auditors ' tenure and audit firm size in Nigeria. *Research Journal of Finance and Accounting*, 3(10), 137-142.
- 7) Asegdew, K. (2016). Determinants of financial reporting quality: Evidence from large manufacturing share companies of Addis Ababa. Doctoral dissertation, Master Thesis. Department of Accounting and Finance, College of Business and Economics, Addis Ababa University-Addis Ababa, Ethiopia.
- 8) Ashafoke, T., Dabor, E. & Ilaboya, J. (2021). Effect of CEO characteristics on financial reporting quality of listed financial firms in Nigeria. *ACTA UNIVERSITATIS DANUBIUS*, 156-176.
- 9) Atanasko, T (2013). Determinants of financial reporting quality for listed entities in Macedonia: Evidence from fair value accounting. *UDC*, 4(1), 97-117.
- 10) Atkinson, S., Baird, S. & Frye, M. (2003). Do female mutual fund managers manage differently? *Journal of Financial Research*, 26(1), 1-18.
- 11) Baatwah, S. R., Salleh, Z. & Ahmad, N. (2015). CEO characteristics and audit report timeliness: Do CEO tenure and financial expertise matter? *Managerial Auditing Journal*, 3(1), 34-50.
- 12) Bamber, L., Jiang, J. & Wang, I. (2010). What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review*, 85(4), 1131-1162.
- 13) Bandyopadhyay, S., Chen, C., Huang, A. & Jha, R. (2010). Accounting conservatism and the temporal trends in current earnings' ability to predict future cash flows versus future earnings: Evidence on the trade-off between relevance and reliability. *Contemporary Accounting Research*, 27(2), 413-460.
- 14) Bansal, N. & Sharma, A. (2016). Audit committee, corporate governance and firm performance: Empirical evidence from India. *International Journal of Economics and Finance*, 8(3), 92-103.
- 15) Barth, M.E., Beaver, W.H. & Landsman, W.R. (2001). The relevance of the value relevance literature for financial accounting standard setting: Another view. *Journal of Accounting and Economics*,39(1), 77-104.
- 16) Becker, C., Jiambalvo, M. & Subramanyam, K. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*,15(1), 1-24.
- 17) Bernardi, R. & Guptill, S. (2008). Social desirability response bias, gender, and factors influencing organizational commitment: An international study. *Journal of Business Ethics*, 81(4), 797-809.
- 18) Betz, M., O'Connell, L. & Shepard, J. (1989). Gender differences in proclivity for unethical behavior. *Journal of Business Ethics*, 8(5), 321-324.
- 19) Butz, C. & Lewis, P. (1996). Correlation of gender-related values of independence and relationship and leadership orientation. *Journal of Business Ethics*, 15(11), 1141-1149.
- 20) Custodio, C. & Metzger, D. (2014). Financial expert CEOs: CEO ' s work experience and firm ' s financial policies. *Journal of Financial Economics*, 114(1), 125-154.
- 21) Daferighe, E. & George, E. (2020). Audit firm attributes and financial reporting quality of quoted manufacturing firms in Nigeria. *SSRG International Journal of Economics and Management Studies (SSRG-IJEMS)*, 7(1), 43-56.
- 22) Dechow, P. & Dichev, I. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, 77(1), 35-59.
- 23) Dechow, P., Ge, W. & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50(2-3), 344- 401.
- 24) Dibia, N. & Onwuchekwa, J. (2015). Determinants of environmental disclosures in Nigeria: A case study of oil and gas companies. *International Journal of Finance and Accounting*, 4(3),145- 152.

Moderating Role of Audit Committee's Legal Expertise on Risk Management and Financial Reporting Quality

- 25) Duc, V. & Thuy, P. (2013). Corporate governance and firm's performance: Empirical evidence from Vietnam. *Journal of Economic Development*, (JED, No. 218), 62-77.
- 26) Echobu, J., Okika, N. & Mailafia, L. (2017). Determinants of financial reporting quality in listed agriculture and natural resources firms in Nigeria. *International Journal of Scientific Research in Social Sciences & Management Studies*, 2(2), 66-83.
- 27) Enakirerhi, L., Ibanichuka, E. & Ofurum, C. (2020). Firms' profitability and financial reporting quality: re and post IFRS adoption in Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS)* 4(1), 249-246.
- 28) Eyenubo, S., Mohamed, M. & Ali, M. (2017). An empirical analysis on the financial reporting quality of the quoted firms in Nigeria: Does audit committee size matter? *International Journal of Academic Research in Business and Social Sciences*, 7(9), 50-69.
- 29) Faccio, M., Marchica, M. & Mura, R. (2015). CEO gender corporate risk-taking and the efficiency of capital allocation. *Journal of Management and Business Review*, 3(2), 35-52.
- 30) Ford, R. & Richardson, W. (1994). Ethical decision making: A review of the empirical literature. *Journal of Business Ethics*, 13(3), 205-221.
- 31) Francis, J. & Wilson, E. (1988). Auditor changes: A joint test of theories relating to agency costs and auditor differentiation. *The Accounting Review*, 63: 663-682.
- 32) Garsombke, H. (1981). The timeliness of corporate financial disclosure. *Communication via Annual Reports*: 204-210.
- 33) Gibbons, R. & Murphy, K. J. (1992). Does executive compensation affect investment? NBER Working Paper.
- 34) Givoly, D. & Palmon, D. (1982). Timeliness of annual earnings announcements Some empirical evidence. *Accounting Review*, 57(3), 486-498.
- 35) Gjerde, Ø., Knivsflå, K.H., Sættem, F. (2005), The value relevance of financial reporting on the Oslo stock exchange over the period 1964-2003. Working paper. Norwegian School of Economics and Business Administration
- 36) Gounopoulos, D. & Pham, H. (2018). Financial expert CEOs and earnings management around initial public offerings. *The International Journal of Accounting*, 53(2), 102-117.
- 37) Hambrick, D. (2007). Upper echelons theory: An update. *The Academy of Management Review*, 32(2), 334-343.
- 38) Hambrick, D. & Mason, P. (1984). Upper echelons: The organization as a reflection of its top managers. *The Academy of Management Review*, 9(2), 193-206.
- 39) Hassan, S. & Bello, A. (2013). Firm characteristics and financial reporting quality of listed manufacturing firms in Nigeria. *International Journal of Accounting, Banking and Management*, 1(6), 47 – 63.
- 40) Hazarika, S., Karpoff, J. & Nahata, R. (2012). Internal corporate governance, CEO turnover, and earnings management. *Journal of Financial Economics*, 104(1), 44-69.
- 41) Heil, D. (2012). The influence of the auditor on the earnings quality of their clients. (Unpublished Master's Thesis, Department of Accounting, Auditing and Control, Erasmus University, Rotterdam.
- 42) Hermalin, B. & Weisbach, M. (2012). Information disclosure and corporate governance. *The Journal of Finance*, 67(1), 195-233.
- 43) Hong, D. & Xiao, C. (2007). Sociological analysis on gender difference of environmental concern. *Sociological Studies*, 2(2). 1-19.
- 44) Irwandi, S. & Pamungkas, I. (2020). Determinants of financial reporting quality: Evidence from Indonesia. *Journal of International Studies*, 13(2), 25-33.
- 45) Ivanova, I. & Bikeeva, M. (2016). Corporate social responsibility: specificity, formation mechanism, estimation of management efficiency. *European Research Studies*, 19(2), 167.
- 46) Jackson, A., Moldrich, M. & Roebuck, J. (2008). Audit-firm tenure and the quality of financial reports. *Contemporary Accounting Research*, 19(4), 637 – 660.
- 47) Jeanjean, T. & Stolowy, H. (2009). Determinants of board members' financial expertise: Empirical evidence from France. *The International Journal of Accounting*, 44(4), 378-402.
- 48) Jensen, M. C., & Meckling, H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.
- 49) Jiang, F., Zhu, B. & Huang, J. (2013). CEO's financial experience and earnings management. *Journal of Multinational Financial Management*, 23(3), 134-145.
- 50) Johnson, J. & Powell, P. (1994). Decision making, risk and gender: Are managers different? *British Journal of Management*, 5(2), 123-138.

Moderating Role of Audit Committee's Legal Expertise on Risk Management and Financial Reporting Quality

- 51) Juhmani, O. (2013). Ownership structure and corporate voluntary disclosure: Evidence from Bahrain. *International Journal of Accounting and Finance Reporting* 3(1), 1-16.
- 52) Kaklar, H., Kangarlouei, S. & Motavassel, M. (2012). Audit quality and financial reporting quality: Case of Teheran Stock Exchange. *Open Journal of Business Management*, 1(1), 55-69.
- 53) Kamolsakulchai, M. (2015). The impact of the audit committee effectiveness and audit quality on financial reporting quality of listed company in stocks exchange of Thailand. *Business Economics Research Online*, 4(2), 23–33.
- 54) Kalyta, P. (2009). Accounting discretion, horizon problem, and CEO retirement benefits. *The Accounting Review*, 84(5), 1553-1573.
- 55) Khan, W. & Vieito, J. (2013). CEO gender and firm performance. *Journal of Economics and Business*, 67(2), 55-66.
- 56) Kim, K. & Yang, J. (2014). Director tenure and financial reporting quality: Evidence from Korea. *Review of Integrative Business and Economics Research*, 3(1), 222- 237.
- 57) Kim, M. & Kross, W. (2005). The ability of earnings to predict future operating cash flows has been increasing not decreasing. *Journal of Accounting Research*, 43(5), 753-780.
- 58) Kirschenheiter, M. (1997). Information quality and correlated signals. *Journal of Accounting Research*, 35(1), 43–59.
- 59) Klai, N. & Omri, A. (2011). Corporate governance and financial reporting quality: The case of Tunisian firms. *International Business Research*, 4(1), 158-166.
- 60) Krishnan, G. & Parsons, L. (2008). Getting to the bottom line: An exploration of gender and earnings quality. *Journal of Business Ethics*, 78(1-2), 65-76.
- 61) Kwambo, M. (2020). Determinants of financial reporting quality of Nigerian stock exchange NSE lotus Islamic index lii. *International Journal of Auditing and Accounting Studies*, 2(1), 95-106.
- 62) Liu, G. & Sun, J. (2010). Director tenure and independent audit committee effectiveness. *International Research Journal of Finance and Economics*, 6(2), 44-51.
- 63) Mahboub, R. (2017). Main determinants of financial reporting quality in the Lebanese banking sector. *European Research Studies*, 20(4), 706-726.
- 64) Markham, J. (2015). A financial history of the United States: From Enron-era scandals to the subprime crisis (2004-2006) from the subprime crisis to the Great Recession (2006-2009). *Routledge*.
- 65) Martin, A., Nishikawa, T. & Williams, M. (2009). CEO gender: Effects on valuation and risk. *Quarterly Journal of Finance and Accounting*, 49(1), 23-40.
- 66) Mason, E. & Mudrack, P. (1996). Gender and ethical orientation: A test of gender and occupational socialization theories. *Journal of Business Ethics*, 15(6), 599-604.
- 67) McNichols, M. (2002). Discussion of the quality of accruals and earnings: multiples. *Journal of Accounting Research*, 40(1), 135-172.
- 68) Merton, H., Miller, H. & Rock, K. (1985) Dividend Policy Under Asymmetric Information. *Journal of Finance*, 40 (September 1985) 1031-51.
- 69) Mensah, B & Deajeon (2013). Adoption of international financial reporting standards (IFRS) in Ghana and the quality of financial statement disclosures. *International Journal of Accounting and Financial Reporting*, 3(2), 2162-3082.
- 70) Michalesco, M. (1999). The determinants of the quality of accounting information disclosed by French listed companies. *1999 EAA Congress, Bordeaux, France*. pp. 1-20.
- 71) Mozes, H. A. (2002), The value relevance of financial institutions' fair value disclosures: A study in the difficulty of linking unrealized gains and losses to equity values. *ABACUS*, 38(1), 1-11.
- 72) Muinde, C. (2013). Relationship between financial reporting and Analysis practices and financial performance of Small and Medium Enterprises in Kenya. *International Journal for Management Science and Technology*, 2 (3), 30– 35.
- 73) Nyor, T. (2013). Financial reporting quality of Nigerian firms: Users' perception. *International Journal of Business and Social Science*, 4(13), 273-79.
- 74) Ogunbade, O., Adekoya, A. & Olugbodi, A. (2021). Effect of audit quality on financial reporting quality of deposit money banks listed on the Nigerian stock exchange. *Journal of Accounting, Finance and Auditing Studies*, 7(1), 77-98.
- 75) Olowokure, O., Tanko, M. & Nyor, T. (2016). Firm structural characteristics and financial reporting quality of listed deposit money banks in Nigeria. *International Business Research*, 9(1), 107-123.
- 76) Osamudiamé, O., Nwadiakor, E. & Imuentinyan, E. (2018). Audit firm tenure and quality of financial reporting quality in Nigeria. *Journal of Political Science*, April, 1–30.
- 77) Peni, E. & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance*, 36(7), 629-645.

Moderating Role of Audit Committee's Legal Expertise on Risk Management and Financial Reporting Quality

- 78) Pourciau, S. (1993). Earnings management and non routine executive changes. *Journal of Accounting and Economics*, 16(1-3), 317-336.
- 79) Rasha, B. (2017). Main determinants of financial reporting quality in the Lebanese banking sector. *European Research Studies Journal*, 20 (4), 706-726.
- 80) Richardson, S., Sloan, D., Soliman, M. & Tuna, I. (2005). Accrual reliability, earnings persistence, and stock prices. *Journal of Accounting and Economics*, 39(2), 437-485.
- 81) Roxas, M. & Stoneback, J. (2004). The importance of gender across cultures in ethical decision making. *Journal of Business Ethics*, 50(2), 149-165.
- 82) Sanni, O., Ijasini, M. & Adamu, M. (2018). Effect of corporate characteristics on voluntary disclosure of listed financial service firms in Nigeria. *Amity Journal of Corporate Governance*, 3 (2), 29-41.
- 83) Santoso, R. & Fuâ, M. (2014). CEO characteristics and earnings management. Doctoral dissertation. Yogyakarta: Universitas Gadjah Mada.
- 84) Sepasi, S., Deilami, Z. & Tavakoli, S. (2017). Internal audit, board of directors and financial reporting quality. *International Journal of Finance and Managerial Accounting*, 2(8), 63–75.
- 85) Shehu, U. (2013). Financial reporting quality, does monitoring characteristics matter? An empirical analysis of Nigerian manufacturing sector. *The Business & Management Review*, 3(1), 147-161.
- 86) Soheilyfar, F., Tamimi, M., Ahmadi, M. & Takhtaei, N. (2014). Disclosure quality and corporate governance: Evidence from Iran. *Asian Journal and Finance and Accounting*, 6(2), 75-86.
- 87) Tapang, A. T., Takon, S. M., Uklala, A. P., Obo, E. B., Efiog, E. J., Ihendinihu, J. U., ... & Nkamare, S. E. (2022). Financial risk management and performance of insurance companies: The moderating role of hedge accounting. *Journal of Management Information & Decision Sciences*, 25(3).
- 88) Titman, S. & Trueman, B. (1986). Information quality and the valuation of new issues. *Journal of Accounting and Economics*, 8(2), 159 –172.
- 89) Thiruvadi, S. & Huang, H. (2011). Audit committee gender differences and earnings management. *International Journal of Gender in Management*, 6(1), 34-50.
- 90) Uwugbe, O. (2011). Corporate governance and financial performance of banks: A study of listed banks in Nigeria. Doctoral dissertation. Covenant University.
- 91) Vafeas, N. (2003). Length of board tenure and outside director independence. *Journal of Business Finance & Accounting*, 30(7-8), 1043-1064.
- 92) Valipour, H. & Moradbeygi, M. (2011). Corporate debt financing and earnings quality. *Journal of Applied Finance & Banking*, 1(3), 139-157.
- 93) Waweru, N. & Riro, G. (2013). Corporate governance firm characteristics and earnings management in an emerging economy. *Journal of Accounting Research*, 11(1), 43-64.
- 94) White, H. (2007). Assessing accrual reliability in periods of suspected opportunism. Working Paper.
- 95) Zhang, Y. & Wiersema, M. (2009). Stock market reaction to CEO certification: The signaling role of CEO background. *Strategic Management Journal*, 30(7), 693-710.



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Evaluation of Instructional Media in Learning among Physics Education Students and Their Academic Performance in Cross River University of Technology Calabar, Nigeria



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ABSTRACT: The research work is on evaluation of instructional media in learning among Physics Education students and their academic performance in Cross River University of Technology, Calabar. Instructional Medias are important implements used by both instructors and students in their teaching and learning process. Physics involves practical and theory such that the issue of teaching practical in Physics Education does not only involve the availability of instructional media but also the accessibility and utilization of instructional media as well. Two research questions and two research hypotheses were formulated to guide the study. Descriptive Survey research design was adopted for the study, 100 level, 200 level, 300 level and 400 level Physics Education students were used for the study. Population of the students were 103 students. The instrument used is Evaluation of Instructional Media and Students' Academic Performance Questionnaire (EIMSAPQ) involving items on availability and accessibility of instructional media as well as performance test. Pearson Product Moment Correlation Coefficient statistical analysis was used to test the hypotheses at 0.05 level of significance. The results shows that the availability and accessibility of instructional media significantly affect learning process among Physics Education students and their academic performance in Cross River University of Technology. It was recommended among others that, the University Physics Education laboratory should be well equipped and students should be allowed to have more access to the available instructional media.

KEYWORDS: Evaluation, Instructional Media, Physics Education, students.

INTRODUCTION

Evaluation of instructional media used in Physics Education is the assessment of their effectiveness in teaching and learning processes. Evaluation as defined by Camilus (2016) is the process of gathering and interpreting evidence regarding the problems and progress of students in achieving desirable educational goals by process of appraising their values and quality in measuring what they are supposed to measure. Instructional media in Physics Education are teaching and learning materials that are used to enhance teaching and learning in the schools. Schools cannot do without them as they boost learning by making it more realistic, reliable, appealing, as well as interesting. They are used to captivate learners' interest while building skills and developing learners' knowledge and self-confidence.

According to Inyang-Abia (2004), instructional media includes all human and non-human resources which may be used by the learner in isolation or in combination, formally or informally to facilitate the acquisition of knowledge, skills and morals. They help to educate students. In the life of a learner there is nothing as important as having the understanding of what is being taught as their performance is based on them. According to Olufumilayo (2014) the availability and use of instructional media are vital for the sustenance of improved participation in learning by students and also have positive impact on the level of teachers' motivation and academic achievement of learners. Similarly, instructional media are vital and important instrument that enables teaching and learning process to be successful, they contribute in improving learners active participation as it exposes them to the real world of learning as well as building understanding and retention because when things are seen, they are more remembered than when they are simply heard (Ngussa, Chiza, 2017). Instructional media are materials and physical means an instructor might use to implement instruction and facilitate students' achievement of the instructional objectives, examples of instructional medial are; computer, laboratory, classroom technology, blackboard and audio and video conferencing (1). Instructional media also include traditional means of delivering instruction (chalkboard, test books, overhead projectors and teachers), mass media used for education (newspapers, movies, radio and television), and the newer electronic instructional

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media (computers, interactive video, and multimedia systems) (2). Physics Education is an important sub-field within science education which focuses on teaching and learning of Physics both at secondary and university levels, it is also concern with physics teaching, preparation and the development and public understanding of Physics. Science Education provides good standards for people and leads to cultural development (Gunta & Tekollo, 2015).

In Wikipedia, Physics Education is referred to as the methods currently used to teach Physics (3). Studying Physics strengthens quantitative reasoning and problem solving skills that are valuable in areas beyond Physics as the aim is to prepare physics students to work on new ideas in Science and Technology, such as; in academic, government or in private sectors (4). The goal of Physics Education is to provide students with a broad understanding of the physical principles of the universe in order to help them develop critical thinking and quantitative reasoning skills that empower them to think about scientific problems and experiments, as well as to provide training (5). In view of the about statement, it can be seen that without the necessary instructional media for students to use, the goals of Physics Education might be difficult to obtained successfully. The use of instructional media stimulate students' learning outcome and improves their interest and academic performance in class activities and can also enhance the tutor's access to new ideas (Nwosu, John, & Ehud, 2017).

In a study conducted by Kola (2013) on instructional materials and improvisation in Physics class, results obtained indicates that what students sees cannot be forgotten easily, but what they hear can easily be forgotten. Results on impact of instructional materials carried out by Okonkwo (2015) shows that students taught with instructional materials perform better than those taught without instructional materials. The findings also indicates that instructional materials influence performance of students positively. The researcher further stated that countries all over the world especially Nigeria, a developing country develop technologically and scientifically. In another study conducted on the analysis of instructional media by Fadieny and Fauzi (2019), the results obtained indicates that instructional medias used for learning process are lacking in values ranging from 70% to 75%. The results they have also shows that 62% of the students have never used the instructional media such that their interest in using instructional media is categorized with a score of 82%. They further explained that in order to motivate students in learning Physics, it is necessary to apply learning media that are interesting and easy to access. The research findings of Abubakar (2020) shows that inadequate instructional materials in teaching has impact on the performance of students and can significantly improve students' interest on their academic excellence by improving their cognitive levels. Abubakar (2020) further suggested that for effective Physics Education there is the need for the use of instructional materials in order to conceptualize it to the student thereby transferring information to the students. Having discussed the important of the availability and accessibility of instructional materials media. This paper seeks to evaluate the importance of instructional media among Physics Education students and their academic performance in Cross River University of Technology, Calabar.

Statement of the problem

Learning process in Physics Education in schools is piqued with its own sets of problems. The issue of availability and accessibility of instructional medial is one thing and the evaluation of instructional media is another, that is, whether the instructional media are able to measure what they are supposed to measure during students learning process. Most at times students are more comfortable with theoretical aspect of learning Physics than the practical aspect. This is a cause for concern in the educational sector which should not be over looked. Thus the issues of availability and accessibility of instructional media during learning process be given serious consideration.

Purpose of the study

The purpose of the study is to examine the effect of evaluation of instructional medial in learning Physics Education and students' academic performance in Cross River University of Technology. The study sought to;

1. Determine the extent to which availability of instructional media affect learning of Physics Education and students' academic performance in Cross River University of Technology
2. Determine the extent to which the accessibility of instructional media affect learning of Physics Education and students' academic performance in Cross River University of Technology

Research questions

The following research questions were asked to guide the research work.

1. To what extent does availability of instructional media affect the learning of Physics Education and student' academic performance in Cross River University of Technology?
2. To what extent does accessibility of instructional media affect learning of Physics Education and students' academic performance in Cross River University of Technology?

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Research hypotheses

The following research hypotheses were tested in their null form at 0.05 significance level.

1. Availability of instructional media does not significantly affect learning of Physics Education and students' academic performance in Cross River University of Technology.
2. Accessibility of instructional media does not significantly affect learning of Physics Education and students' academic performance in Cross River University of Technology.

METHODOLOGY

A descriptive survey was adopted for the study. The study was carried out in Cross River University of Technology, Calabar, Cross River State, Nigeria. Students were the respondents of the questionnaire items. Population of the study were all Physics Education students, from first year to fourth year, totaling 103 students. 30 items questionnaire were drawn for students to freely indicate their responses. Six items were drawn for Availability of Instructional Media and another six items were drawn for Accessibility of Instructional Media while the remaining 18 items were on students' academic performance. The instrument used is Evaluation of Instructional Media and Students' Academic Performance Questionnaire (EIMSAPQ). Pearson Product Moment Correlation Coefficient was used to evaluate the availability and accessibility of instructional media. The population of the study were all 103 Physics Education students of the Department of the Curriculum and Instructional Technology. No sample was taken as the population size was manageable. The responses to the items were Strongly Agree, Agree, Disagree and Strongly Disagree with response point of 4, 3, 2, and 1.

RESULTS

The result is presented on hypothesis by hypothesis bases. All hypotheses were tested at 0.05 level of significance with appropriate degree of freedom.

Hypothesis One

Availability of instructional media does not significantly affect learning process of Physics Education and students' academic performance in Cross River University of Technology. The independent variable is availability of instructional media in learning process, while the dependent variable is students' academic performance. Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the hypothesis, the result is shown in Table 1.

Table 1. Pearson Product Moment Correlation Coefficient Analysis of availability of instructional media on students' academic performance in Physics Education. N=103

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	cal-r
Availability of Instructional Media	1246	12262		
Students' academic Performance in Physics Education	942	5890	12806	0.73

Significant at <0.05 , $df = 101$, critical $r = .195$

Result on Table 1, shows that the value of this coefficient indicate a positive relationship between students' academic performance in Physics Education and the availability of instructional media. The relationship is positive because the calculated r - value 0.73 does not carry a negative sign and was found to be greater than the calculated r - value of .195 when tested at 0.05 level of significance at 101 degree of freedom. Since the calculated r - value is greater than the critical r - value, the null hypothesis was therefore rejected. This means that the availability of instructional media significantly influence Physics Education students' academic performance in Cross River University of Technology, Calabar.

Hypothesis Two

Accessibility of instructional media does not significantly affect learning of Physics Education students' academic performance in Cross River University of Technology. The independent variable is accessibility of instructional media in learning process, while the

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dependent variable is student's academic performance. Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the hypothesis, the result is shown in Table 2.

Table 2: Pearson Product Moment Correlation Coefficient Analysis of accessibility of instructional media on students' academic performance in physics education N=103

VARIABLES	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	CAL-R
ACCESSIBILITY OF INSTRUCTIONAL MEDIA	1246	11480	12107	.28
STUDENTS' ACADEMIC PERFORMANCE IN PHYSICS EDUCATION	942	5890		

Significant $\alpha < 0.05$, $df=101$, critical $r = .195$

Result on Table 2 shows that the calculated r- value of 0.28 was found to be more than critical r- value of .195 when tested at 0.05 alpha level of significance and at 101 degree of freedom. The result shows a positive moderate significant relationship. This means that the null hypothesis was rejected as the accessibility of instructional media in learning process significantly affect Physics Education students' academic performance in cross River University of Technology.

DISCUSSION OF FINDINGS

Hypothesis One

Analysis of data in Table 1 shows that was a significant relationship between availability of instructional media in learning process in Physics Education and students' academic performance in Cross River University of Technology, Calabar. This finding is in line with the view of _____ that.....

Hypothesis Two

The finding of this hypothesis indicate a moderate relationship between accessibility of instructional media in learning process in Physics Education and students' academic performance in Cross River University of Technology, Calabar. This finding is supported by _____ who posited that.....

CONCLUSION

Instructional media are very important tools and boosters of learning process among Physics Education students. They facilitate learning processes. Evaluating their availability and accessibility are also essential in learning. Without them, learning becomes complicated and affect students' learning outcome which is their academic performance. Instructional media serves as motivating factors to students. Instructional media are of different types ranging from human to material media.

RECOMMENDATIONS

The following recommendations were made based on the findings of this study

1. University Physics Education laboratory of the faculty of education should be well equipped with modern instructional media and made available to students.
2. Instructional media should be made easily accessible to students for effective learning process.

REFERENCES

- 1) Abubakar, B. M. (2020). Impact of instructional materials on students' academic performance in physics, in Sokoto State, Nigeria. 2nd International Conference in Civil and Environmental Engineering. *IOP Conference Series Earth and Environmental Science*, 476(1), 1 - 6
- 2) Camilus, B. B. (2016). Teachers' instructional behavior and students' academic performance in agricultural science in Uyo educational zone of Akwa Ibom State. *African Journal of Vocational Education (AJOVED)*, 6(1), 35 – 43.

Evaluation of Instructional Media in Learning among Physics Education Students and Their Academic Performance in Cross River University of Technology Calabar, Nigeria

- 3) Fadieny, N., & Fauzi, A. (2019). The analysis of instructional media in developing of lightning e–module for physics learning in senior high school. The 2018 international Conference on Research and Learning of Physics. *Journal of Physics Conference Series*, 1185 (1), 1 – 6
- 4) Gunta, G. S., & Tekollo, O. K. (2015). Problems in teaching and learning of physics at secondary and preparatory schools, the cases of Wolaita and Dwuro Zones. *Global Journal of Human and Social Science* 15(7), 1 - 6
- 5) Inyang-Abia, M. E. (2004). Essentials of educational technology. A Handbook of Education and Media Partitions, Uyo: Legacy Nigeria Limited.
- 6) Kola, J. A. (2013). Instructional materials and improvisation in physics class: Implication for teaching and learning. *Journal of Research and Method in Education (JRME)* 2(5), 1 – 6
- 7) Ngussa, B. M., & Chiza, A. (2017). Significance and adequacy of instructional media as perceived by primary school schools pupils and teachers in Kinondoni district, Tanzania. *International Journal of Educational Policy Research and Review* 4(6), 151 – 157
- 8) Nwosu, J. C., John, H. C., & Ehud, M. M. (2017). The use of instructional media among selected science subject teachers in Ilishan Remo senior secondary schools, Ogun State. *Journal of Education Policy and Entrepreneurial Research* 4(1), 61 – 71.
- 9) Okonkwo, P. (2015). Impact of instructional materials in teaching and learning of physics in senior secondary schools: A case study of some selected secondary schools in Onisha Education Zone. *Journal of Research Education* 5(1), 1 - 9
- 10) Olufumilayo, I. (2014). The place of instructional media in curriculum development. *Education and Development*. 2(2), 503 – 510

Website Reference

- 1) <https://go.roguecc.ed>department>instructional-media>
- 2) <https://education.stateuniversity.com>pages>media-lea...>
- 3) Wikipedia. <en.wikipedia.org/wiki/physics-education>
- 4) <https://physics.stanford.edu>why-study-physics>
- 5) <https://physics.berkeley.edu>undergraduate-degree>goal>



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An Analysis of Roof Rainwater Harvesting: A Catalyst to Water Demand Management



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ABSTRACT: Yearly, the rainy season always happens globally, especially in the Asia Pacific. Where water is directly on the soil, roof, plants, etc. without proper harvesting, this water may cause damage in many aspects, such as over watering to the plants, soil, erosion, bacteria, and germs that cause viruses to begin to grow if it has been tainted y dirt and other impurities. So, proper harvesting of roof rainwater is important because it will be utilized for bathrooms, laundry, garden irrigation, etc. The Information and Communication Technology building of Isabela State University – Ilagan Campus was utilized in this study. This paper presents the average rainfall, which represents the monthly average, water availability, water demand, and water storage. As stated, the water demand is 2500 liters per day, which equals about 75000 liters per month. Wherein the amount of water that can be collected from the roof is larger than the water demand. The finding of this paper was extremely beneficial to the campus because they presented the entire details of the roof rainwater harvested in liters which will serve as the basis for utilization.

KEYWORDS: Catalyst, water demand, Rainwater harvesting, water demand, water availability

I. INTRODUCTION

Water is important in different aspects of life, not only for humans but also for other living things that need a supply of water. Considering the day-to-day activities such as washing clothes, watering plants, cooking, etc., water does everything for the satisfaction of every individual when it is considered a source for everything.

Accept the truth. Sometimes, or not all the time, the resources of water are not enough to be distributed in every household, school, and other establishment due to power interruptions and maintenance repairs. It may cause delays in tactics or work. So, harvesting rainwater on the roof may be one of the solutions that could be considered too.

Rainwater harvesting is used to store rainwater for future purposes. By incorporating a smart water management system, Rainwater harvesting will gain the ability to store the excess water in a smarter way by utilizing new technology, which deals with the modules like sensors [1].

The importance of shifting away from traditional storm-and-rainwater management that relies on large-scale, piped infrastructures and more decentralized, natural solutions is frequently emphasized in sustainable urban development in general and in sustainable urban rainwater management in particular [1], [2], [3]. The use of green roofs, artificial wetlands, permeable pavements, and infiltration trenches are just a few of the alternative rainwater harvesting techniques that are thought to be better suited to managing rainfall in densely populated cities, especially considering climate change. They are recognized for offering a variety of advantages, including groundwater replenishment, flood control, aesthetic, and recreational value [1], being more easily adaptable to local conditions [4], and lowering water use [3-5].

Rainwater harvesting systems have long been installed in domestic homes in the Philippines through the traditional once with the sole purpose of supplying a non-potable water supply for use in bathrooms, laundry rooms, and garden irrigation [6].

Yearly always happened especially during the rainy season, water is gathered on the roof and poured through the boundary pipes to flow down. Most often water is wasted by being airlifted to soiled areas. When roadways were composed of mud or sand in the past, rainwater was buried as it began to overflow [7]. However, the roads of today are obviously composed of cement, concrete, wood, etc. But these roads need to be strengthened that will be used for long years that support the weight of the increasing number of vehicles as a result of population growth [9]. Rainwater is now flowing in its own direction and collecting in corners rather than being stored directly in the ground [8]. Many bacteria and gems that cause viruses will begin to grow in the

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rainwater that has been tainted by dirt and other impurities. As a result, rainfall must be managed for better utilization and stored in a way that allows for absolute harvesting.

The paper presents roof rainwater harvesting wherein it focuses on the average rainfall prediction, water availability, demand, and requirements. Its purpose is to determine the amount of water to be harvested so that the consumer is aware of the estimated value that can be consumed and utilized. So, in this study, water harvested from the roof rainwater will not be useless and can be a great help to schools, universities, households, some other agencies, and establishments.

An electronic copy can be downloaded from the conference website. For questions on paper guidelines, please contact the conference publications committee as indicated on the conference website. Information about final paper submission is available from the conference website.

II. METHODOLOGY

A. System Architecture

The researcher used the average annual rainfall, roof size, and roof type to determine the total amount of water harvested through the roof rainwater. The formula used is

$$\text{Roof Area} \times \text{Rainfall} \times \text{Runoff Coefficient}$$

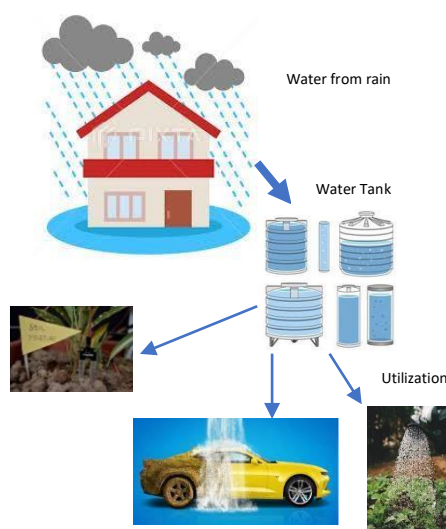


Figure 1. The system architecture represents the flow of roof rainwater harvest.

Also, the average rainfall is predicted, wherein represents the monthly average. Water availability, demand, and required storage are also represented in this study. The information and communication technology building at ISU Ilagan was used as a sample in this paper. The reservoir/tank was already constructed and is located at the back of the ICT building.

B. Water Bill Consumption

The water bill consumption of ISU Ilagan was utilized as one of the tools in analyzing the effectiveness of using the roof rainwater harvester. Water consumption data were obtained at monthly time intervals from Water District in the period from the 1st of January 2020 till the end of October 2022. The data collected is a water bill of the campus. The year 2022 is only until October, to fill in the missing water bill consumption for the month of November and December, the researchers used a data mining predictive model. A feed-forward back-propagation artificial neural network is used in the numerical modeling using a Matlab script. The time series of historical water consumption is used in the model to forecast future demand. Only one data analysis is carried out: The analysis aimed at predicting monthly water consumption and forecasting the demand for the month taking into account a lag of 1 month in order to study the effect of the water consumption of the month before on the actual demand.

III. RESULTS AND DISCUSSIONS

Below is the sample where the roof rainwater harvest was determined as the total amount harvested:

Location:	IT Bldg., ISU Ilagan, Calamagui 2nd, Ilagan, Isabela
Latitude:	17.12930 degrees
Longitude:	121.86868 degrees

An Analysis of Roof Rainwater Harvesting: A Catalyst to Water Demand Management

Roof size:	529.5 square meters
Roof type:	Metal
Runoff coefficient:	0.9
Water Demand:	2500 liters (2.5 m ³) per day



Figure 2. The map site of the sample building

Based on the Latitude, Longitude, Roof size, and Roof type the optimum size for a storage reservoir for this rainwater harvesting system is 194600 liters (194.6 m³).

Rainfall

The average rainfall at this location varies between 44.9 mm in the driest month (February) and 353.5 mm in the wettest month (November). The total annual rainfall in an average year is 2112 mm.

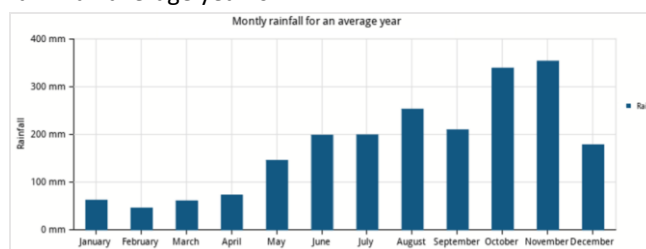


Figure 3. The average monthly rainfall

Water Availability

A metal roof has a runoff coefficient of 0.9 with 4.6% slope, which means that 90% of the rain can be harvested. Based on this runoff coefficient and a roof area of 529.5 square meters a volume of 21397 liters (44.9 mm x 529.5 m² x 0.9) of water can be collected in the driest month (February) and 168460 liters (353.5 mm x 529.5 m² x 0.9) in the wettest month (November). The total yearly amount of water that can be collected from the roof is 1006700 liters (1007m³) in an average year.

Water Demand

The water demand is 2500 liters per day, which equals about 75000 liters per month. The total water demand is 912500 liters (912.5 m³) per year. During 7 months of the year (June, July, August, September, October, November, and December) the amount of water that can be collected from the roof is larger than the water demand. This excess water can be stored to be used in the months when the water availability is smaller than the demand.

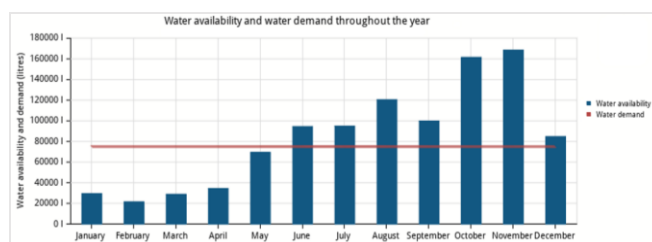


Figure 4. Water availability and demand

An Analysis of Roof Rainwater Harvesting: A Catalyst to Water Demand Management

Required Storage

A storage reservoir (tank) can be constructed to collect and store the water during the wet months so this water can be used during the dry months. For this location, roof size, and water demand the optimum size of a storage reservoir (tank) is 194600 liters (194.6 m³).

The storage reservoir will be full in November and December and then slowly drain until it is (almost) empty at the end of May.

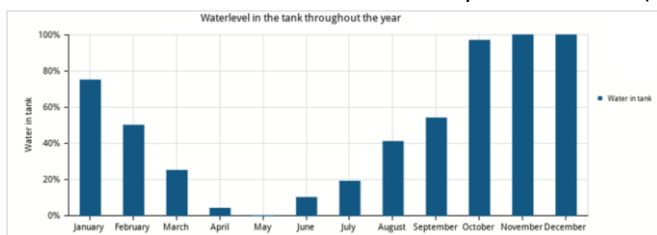


Figure 5. The Water Level in the Tank

Water Bill Consumption

The graph shows that there is an increase in the water bill in 2022 compared to the previous two years (2020 and 2021). This implies that water consumption is related to the number of people using the water facilities on campus due to the pandemic during those years. Further analysis suggests that for a two-month implementation of face-to-face classes in the schools, there is an absolute increase in consumption that shows almost sixty percent (60%) compared to non-contact or work-from-home arrangements as represented in the graph.

The above analysis suggests that a roof-mounted rainwater harvester can significantly reduce the water bill consumption at the ISU Ilagan Campus in a face-to-face setting, up to its average consumption bill.

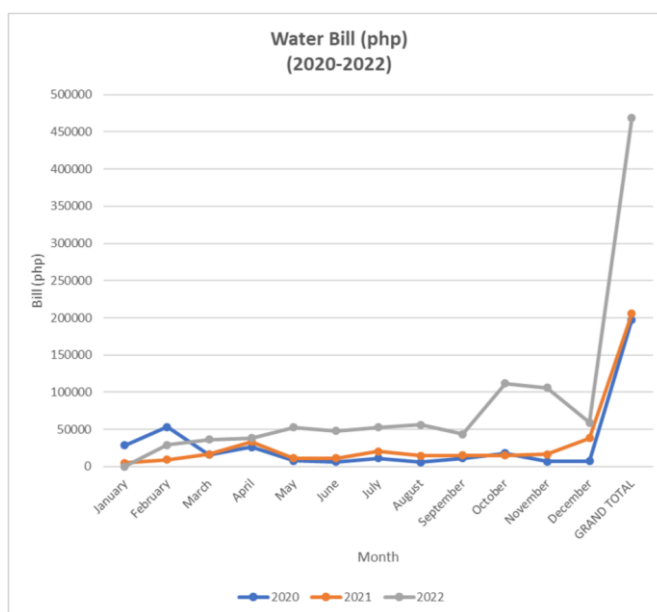


Figure 6. Water bill consumption of ISU-Ilagan for three consecutive years

IV. CONCLUSION AND RECOMMENDATIONS

Based on the findings and analysis of the estimated amount of water harvested from roof rainwater, it is concluded that using those estimation data in the rainfall average, water availability, water demand, and required storage is important. It was already computed that those amounts and averages of the water harvested from roof rainwater are very usable in many ways. It's been observed that the findings can be a great help to the campus because it shows the amount of water available that will cater to how many volumes could be supplied monthly. It is considered a big saving for the campus and as well for other agencies, households, and other establishments that want to implement it. The ICT building on the Ilagan Campus was used as the model and sample for this study. The campus can estimate the amount of water harvested for every building located on the campus. According to the data presented in this study, the campus will be benefited and save on water bills consumed.

Further analysis shows that the predicted water consumption is relative to the consumption during face-to-face setup as water usage is high when faculty, staff, and students are utilizing different water equipment for consumption.

An Analysis of Roof Rainwater Harvesting: A Catalyst to Water Demand Management

Furthermore, the study also recommends that there be an additional part two of this study; hence, the technological aspect is still needed for the distribution of the harvested roof rainwater. Such things as using some sensors and automatic distribution when the tank has already reached its maximum level to avoid wasting the harvested roof rainwater.

REFERENCES

- 1) Cettner, A., Ashley, R., Hedström, A., Viklander, M., 2014. Assessing receptivity for change in urban stormwater management and contexts for action. *J. Environ. Manage.* 146, 29–41.
- 2) Brown, R.R., Farrelly, M.A., Loorbach, D.A., 2013. Actors working the institutions in sustainability transitions: The case of Melbourne’s stormwater management. *Global Environ. Change* 23, 701–718.
- 3) Ward, S., Barr, S., Butler, D., Memon, F.A., 2012. Rainwater harvesting in the UK: Socio-technical theory and practice. *Technol. Forecast. Soc. Change* 79, 1354–1361.
- 4) Petrucci, G., Rioust, E., Deroubaix, J.-F., Tassin, B., 2013. Do stormwater source control policies deliver the right hydrologic outcomes? *J. Hydrol.* 485, 188–200.
- 5) Domènech, L., March, H., Vallès, M., Saurí, D., 2015. Learning processes during regime shifts: empirical evidence from the diffusion of greywater recycling in Spain. *Environ. Innovat. Soc. Trans.* 15, 26–41.
- 6) British Standards Institution. BS 8515:2009+A1:2013—Rainwater Harvesting Systems—Code of Practice; BSI: London, UK, 2013.
- 7) Ferguson M in the year 20012 researched on 12 months rain water tank water saving and energy.
- 8) N.Thulasi Chitra, K.Pushpa Rani and Roja published a paper titled “A Credit Card Fake Detection System using Image Cryptography” in international journal of recent technology of engineering with ISSN: 2277-3878 (Online), Volume-7 Issue-6, March 2019
- 9) B. Madhuravani, Dr DSR Murthy, A novel secure authentication approach for wireless communication using chaotic maps, Proceedings - International Conference on Trends in Electronics and Informatics, ICEI 2017, 2018, 2018- January, pp. 360–363 [8]. Rainwater Harvesting Ltd. Rainwater Harvesting Systems. Available online: <http://www.rainwaterharvesting.co.uk> (accessed on 12 August 2015).



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Schools Leadership in Improving Islamic Education Teachers' Professionalism in Poso Regency



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ABSTRACT: In educational institutions, schools are led by a principal with the authority to lead the school with a leadership style. Leadership is how a leader influences subordinates' behavior so they want to work together and work productively to achieve organizational goals. A leadership style that does not involve assistants in making decisions will result in disharmony in the relationship between the leader and the led. Therefore leadership is one of the factors that determine a manager's success. This study aims to determine the leadership role of high school principals in Poso in increasing the professionalism of Islamic religious education teachers. This study uses a qualitative method. Data was collected through field observations, in-depth interviews, and written document analysis. The results of this study indicate three types of leadership owned and implemented by schools in Poso, namely democratic leadership, Laisses Faire, and Transformative. Then there are several efforts made by school principals to improve the professionalism of Islamic religious education teachers, namely empowering the competencies possessed by teachers, involving teachers in Islamic religious education teacher organizations, conducting training, workshops, and supervision, and providing opportunities for teachers to continue their education.

KEYWORDS: School leadership, Islamic education, teacher, professionalism

I. INTRODUCTION

Teachers have a significant role in the development of human resources. Therefore, a teacher is expected to have exemplary professionalism because students will develop optimally only with a professional teacher. Later, these students will become reliable human resources and compete in an era as complex and advanced as it is now. The teaching profession has the task of educating, teaching, and training. Education means continuing and developing life values, teaching means continuing and acquiring knowledge, and training means developing skills in students. In carrying out these duties and responsibilities, a teacher is required to have specific abilities and skills. These abilities and skills are part of the teacher's professional competence.

Competence is an ability the teacher owns so that his duties as an educator can be carried out correctly. The teacher is one of the human elements in the educational process at school, and the teacher holds a dual task, namely as a teacher and educator (Terehoff, 2002). As a teacher, the teacher is tasked with pouring several learning materials into the students' brains. In contrast, as an educator, the teacher guides and fosters students to become capable, active, creative, and independent moral human beings.

In educational institutions, schools are led by a principal with the authority to lead the school with a leadership style. Leadership is how a leader influences subordinates' behavior so they want to work together and work productively to achieve organizational goals. A leadership style that does not involve assistants in making decisions will result in disharmony in the relationship between the leader and the led. Therefore leadership is one of the factors that determine a manager's success.

In school management, schools are given the flexibility to manage their potential by involving all stakeholders to increase the school's quality (Hikmah, Dzakiah, Yanti, Haryanto, & Nurdin, 2023). Because the school has such broad authority, the presence of a leadership figure is significant. Good leadership certainly dramatically impacts whether or not organizational goals are achieved because leaders influence the performance they lead. The ability to influence a group to achieve goals is part of leadership (Carmeli, Sheaffer, Binyamin, Reiter-Palmon, & Shimoni, 2014). Each leader has a leadership style, which is the attitude, movements, or behavior chosen by a leader in carrying out his leadership duties. The style of a leader is different from

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one another depending on the situation and condition of his leadership. Leadership style is a norm of behavior used by someone when that person tries to influence the behavior of others (Zaid, Pettalongi, & Nurdin, 2022).

In several senior high schools in Poso Regency, which are in urban areas, schools have achievements, and this varying number of students is possible because the Principal's leadership in managing or leading has different methods and strategies, especially towards Islamic Religious Education teachers at these schools. This research focuses on the three high schools which are geographically located in the same way, namely in the Muslim community. The output or achievement is closely related to the teacher's role in providing learning because a teacher should have several competencies to carry out the teacher's duties professionally. Therefore, the competence of this teacher must continually be improved so that the quality of learning also always increases as indicated by the achievement or output of the school's students.

II. LITERATURE REVIEW

A. Definition of Leadership

There are various types of leaders. There are formal leaders, which occur because leaders rely on legal authority. Some informal leaders appear because leaders without proper authority succeed in influencing the behavior of others (Silins & Mulford, 2002). As often expressed by leadership experts, power comes from rewards, coercion, expertise, charisma/personal strength.

In this case, what is meant by leadership is formally given responsibility for managing or managing something to achieve specific goals. In society, a leader always appears who can influence and direct the behavior of community members toward particular goals. Thus the leader is considered to represent the community's aspirations, and the leader can realize most people's hopes. However, in reality, leaders have broader intelligence and insight than the average follower, so it is only natural that the presence of leaders is greatly missed to overcome various problems community members face. Leadership is the activity of influencing people to cooperate toward goals that are desirable (Nurdin, Scheepers, & Stockdale, 2022). The essence of leadership is how to control other people to want to work together to achieve the goals that have been set.

Leaders use their intelligence to meet expectations by utilizing the environment and the organization's potential. In other words, leaders try to involve members of the organization to achieve goals (Kort, 2008). The ability to move, direct and influence members of the organization to achieve organizational goals as a form of leadership. Meanwhile, an indicator of the success of a leader is marked by the ability to influence behavior toward the goals that have been set.

In line with this, Mulyasa said that leadership is fundamental in influencing organizational members. Principals must encourage teacher professionalism by showing a sense of friendliness, closeness, and full consideration of teachers as individuals and as a group. Positive leader behavior can encourage groups by directing and motivating individuals to work together in groups to achieve organizational goals.

Meanwhile, according to Ngalm Purwanto, leadership is a collection of a series of abilities and personality traits, including authority, to be used as a means to convince those he leads so that they are willing and able to carry out the tasks assigned to them willingly, enthusiastically, have inner joy, and feel not forced. So all members work with the feeling that it is not a burden but something fun.

The term leadership comes from the word lead which means to lead or guide, then leadership means about leading or how to lead (Kort, 2008). Thus leadership is how a person's technique or way of guiding or directing a person or group in achieving the target of a goal that has been planned and set.

From several definitions of leadership, there are common assumptions that are general, namely:

- a. Within a group phenomenon involves interaction between two or more people;
- b. It involves an influencing process in which intentional influence is exerted by a leader on members of the organization.

B. Leadership Typology

There are three leadership elements: humans or members, means, and goals. To empower all these elements proportionally, a leader must have the knowledge or skills to carry out his leadership. This knowledge and skills can be obtained through theoretical learning experiences or practical experiences while being a leader. The style of leadership is a way or technique of someone in carrying out a leadership. Furthermore, it is said that leadership style can also be interpreted as a behavioral norm used by someone when that person tries to influence the behavior of others as seen. In this case, the effort to harmonize between people who will influence behavior and those who will be influenced becomes very important.

The style of leadership is also understood as a pattern of behavior of a typical leader when influencing group members; what the leader chooses to do and how the leader acts in influencing group members forms his leadership style. There are three main types of leadership, which can also be called extreme, namely: the autocratic type, the laissez-faire type, and the democratic type. Meanwhile, the characteristics or indicators will be described below:

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a. Autocratic leadership type

In autocratic leadership, the leader acts as a dictator toward the group members (De Cremer, 2006). For him to lead is to move and force the group. His interpretation as a leader is nothing but showing and giving orders. The obligation of subordinates or their members is to follow and carry out. They may not argue or submit suggestions. Autocratic leaders do not want meetings or deliberations. Gathering or meeting only means to convey instructions. Any difference of opinion among group members is considered shortsightedness, defiance, or a violation of discipline against the orders or instructions set.

His actions, he cannot be contested; supervision for an autocratic leader only means controlling whether all the orders given are obeyed or carried out correctly by his members (Caillier, 2020). So it's no supervision but inspection: looking for mistakes and scrutinizing people who disobey and don't trust the leader personally, then such people are threatened with punishment, transferred, or fired from their positions. Otherwise, people who are obedient and can please themselves as gold children will even be rewarded. This excessive attitude can lead to a philosophy of giving up without criticism, a perspective as long as the father is happy or submits to the leader without daring to give an opinion on the ideas he has. Excessive domination, as above, will lead to opposition to the leader or cause apathy towards the leader.

b. Democratic leadership

The democratic leadership type interprets its leadership not as a dictator but as a leader among its group members (Gastil, 1994). The relationship with group members is not as employers and workers but as work partners. Democratic leaders always try to stimulate their members to work cooperatively to achieve common goals. In his efforts and actions, he always bases himself on his group's interests and needs and considers his group's abilities (Beerbohm, 2015). When carrying out their duties, they are willing to accept and even expect suggestions from their members and constructive criticism as feedback for consideration in further actions. He believes in himself as well as in the members of his group. Democratic leaders always cultivate a sense of kinship.

III. METHODOLOGY

This study uses a qualitative case study method (Nurdin et al., 2022; Nurdin, Stockdale, & Scheepers, 2013) to investigate the role of schools' leadership in improving teachers professionalism in Poso regency in Indonesia (Nurfaiqah, Nurdin, & Alhabsyi, 2022; Rahmawati, Nurdin, & Pettalongi, 2022). Data were collected through direct observation in the case field and in-depth interviews with teachers and the elementary school principal (Jumahir, Nurdin, Pettalongi, Fitri, & Aftori, 2023; Nurdin, 2023). Written materials were also analyzed to understand the strategy used to implement moderate Islamic values in elementary school. Data analysis consists of several procedures, which include reduction and verification techniques with various data sources (Alamsyah, Pettalongi, & Nurdin, 2023; Arif, Nurdin, & Elya, 2023). The reduced data was then analyzed, reflecting on the theoretical concepts used in this study. Finally, the results were presented based on thematic issues found in the data (Muhaimin, Nurdin, & Alhabsyi, 2023; Nurdin, Agam, & Adawiyah, 2023; Nurdin, Pettalongi, Ahsan, & Febrianti, 2023), which show the insight relating to leadership style within schools in Poso regency in Indonesia.

IV. RESULTS AND DISCUSSION

A. *Types of Principal Leadership in Improving Teacher Professionalism*

In fact, every school principal has various types or styles of leadership to move educators and education staff. This is done to increase the professionalism of all stakeholders. Besides, the kind of Principal's leadership is expected to maintain harmony throughout the school community in their respective duties and responsibilities. The types of leadership possessed and carried out by the three Principals of State Senior High Schools can be seen in the following interview results:

1. Leadership Type of State Senior High School Principal

The democratic leadership type interprets its leadership not as a dictator but as a leader among its group members. The relationship with group members is not as employers and workers but as work partners. Democratic leaders always try to stimulate their members to work cooperatively to achieve common goals. In his efforts and actions, he always bases himself on the interests and needs of his group and considers the abilities and abilities of his group.

The elements of democratic leadership include opinions focusing on the results of deliberations, tolerance, accepting criticism and suggestions from subordinates, creating a family atmosphere, communication with associates, happy, creative subordinates, accepting suggestions and opinions, trusting subordinates, often holding meetings, fair and wise. The following are the results of interviews with the Principal regarding democratic leadership, which reveal that:

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There are several ways that I lead the school, including building good relationships with all teachers and staff at the school, because good relationships with all stakeholders, including teachers of Islamic Religious Education, will create better working relationships.

An effective school principal is to build good cooperative relationships with all members of the school environment for which he is responsible. Therefore the High School principal conducts and establishes good relationships with all teachers and education staff in the school, in the sense of not placing himself like a commander who makes teachers and education staff feel afraid, which in the end, all feel they own the school and together achieve the school's vision and mission.

The observations and facts in the field also show that the Principal exercises leadership well because he builds cooperative relationships with all stakeholders without discrimination. As long as people work at the school, the Principal maintains good relations, especially with Islamic Religious Education teachers.

In leading the school, the head of the High School implements a system that assumes that all teachers and education staff have the competence to carry out their duties at school. The school principal only provides encouragement and motivation for all teaching and educational staff following the slogan instilled by Mr. Kihajar *Dewantara Education Ing ngarso sung tuladha ing madya mangun karsa tut wuri handayani*. A participant said that:

Indeed, sometimes there are teachers or education staff who disagree with the Principal's policies, but of course, we approach them in a family way. Their motives made them disagree with the Principal's policies, but as long as the procedures are carried out, the aim is for the school's good. I don't know the background of making a policy, so I usually give arguments which, in the end, teachers or education staff who disagree then understand and agree. The point is to provide and fully understand the policies adopted by the school principal for the good and benefit of the school.

In responding to differences of opinion on the policies carried out by the school principal, as the head of the High School, overcame it by using a family system in the sense of explaining again the substance of the policies taken are for the good and benefit of the school and so that the vision or mission and school programs that have been set can be realized, to teachers or educational staff who disagree are given a detailed understanding of the policy objectives taken by the school principal and finally understand it, the High School principal who has experience as a school principal for four years realizes that there are indeed teachers or education staff who have thoughts and interpretations different from what is carried out by the leadership if it has not been understood correctly and in detail the purpose of taking a policy.

In line with this, the facts on the ground are based on observations that the Principal carries out leadership well. Suppose several stakeholders need help with the implemented policies that are decided. In that case, the Principal addresses them with a kinship approach so that no one feels hurt between them, as said by the following participant:

When I am going to carry out an activity, of course, I ask for opinions from fellow teachers and education staff at this school through meetings so that all stakeholders are involved in making the decisions that I will make, the decisions or activities that I do are known and approved by my fellow teachers and education staff at this school.

The leadership of the senior high school principal applies collegial collective leadership in the sense that it is not authoritarian in carrying out school activities or programs, as evidenced by what was asked by the author. The Principal stated that when carrying out activities or programs at school, it is done first by asking for the considerations and opinions of teachers and education staff at the school through a teacher council meeting. Regarding the implementation of the meeting at the school, the management of the Intra-School Student Organization, Senior High School, Nabila Bunga Lestari student stated:

When the meeting was held at our school, the teachers and staff at this senior high school attended it. While we students were given independent assignments to study, we still did not go home; even though the teachers were at the meeting, we were still learning and given tasks to do independently.

From the results of these interviews, it is known that in senior high schools, even though teachers and staff attend the meetings, the students still study even though they study independently. This shows that the discipline of learning in this school is good. Furthermore, the results of the meeting decisions will be used as a benchmark and reference in the implementation of activities so that if the implementation is not following the meeting results, it will be communicated again. This is expressed in the following interview results:

Of course, we make the results of the meeting decisions a reference in carrying out activities or programs following the decisions of the meetings carried out because the results of the meeting decisions are already something that must be done at the time of implementing the meeting decisions are not following what was done then I need to communicate back to my fellow teachers, especially to the vice principal who is in charge of these activities, for example when it comes to procuring facilities and infrastructure then I have to communicate to the vice principal of facilities and infrastructure.

These interviews illustrate that the Principal of the Senior High School has a democratic leadership style because it allows all stakeholders to express aspirations but remains guided with the aim that no one feels disadvantaged, but all feel valued and

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respected. Based on the results of observations in the field, the Principal listens to input or opinions from all existing stakeholders when they express views about what was discussed, besides that the Principal also provides an opportunity for the entire board of teachers and education staff (stakeholders) to convey their ideas or opinions, especially in school meetings.

Leadership that prioritizes deliberation or pays attention to suggestions and opinions from members, in this case, teachers and education staff, according to the head of the High School, is essential because if a decision is made without the knowledge of group members, or if at school the teachers and education staff are not involved or are not asked for opinions or suggestions, of course, if there are problems later they will not help to provide solutions. Still, if teachers and education staff are involved, they will feel they have ownership and will undoubtedly share responsibility for what has been implemented by the school.

The Principal who constantly communicates with all members will get support so that in making decisions, the Principal does not hesitate because he feels supported by members and stakeholders, as stated by the following participant.

Teachers, apart from being educators are, of course, also encouraged not to forget their fate in terms of their careers. As a principal, I always remind them to pay attention to rank and career class. If they meet the requirements, I encourage them to take care of their promotion because when it's time to get promoted, the teacher usually forgets, so as the Principal, I encourage that the promotion can be according to the time that has been targeted and the main task as a teacher is also carried out properly, so that the obligations in teaching and the right to develop and promotion are balanced.

The Principal of the senior high school is very concerned about the careers and ranks of educators and education staff so that almost all teachers and staff carry out their main tasks and functions correctly. The career and promotion of teachers and education staff also run smoothly and without obstacles because the Principal always encourages and reminds teachers and education personnel when it is time to be promoted. The Principal encourages and assists in managing the promotion of teachers and education staff in the school he leads.

Observations and facts on the ground also indicate that the Principal is very concerned about the needs of the teacher council and education staff, especially regarding promotions that all stakeholders will carry out because the Principal is aware that he has a responsibility as a motivator, so he often reminds teachers about promotions.

Apart from being a leader, a good school principal is also a motivator, meaning that the Principal must have an excellent strategy to encourage and motivate education staff or educators to carry out the tasks assigned to the fullest. Then the Principal also pays attention to his rights, including his career and rank must be considered so that the duties, obligations, and rights coincide. In line with the commitments fulfilled, their requests are fulfilled.

As an effective school principal, he must always pay attention to all the hopes and expectations of the teachers and education staff in the school. What is the hope or expectation of teachers and education staff, including how a teacher and education staff can carry out their duties properly and optimally and their rights are also fulfilled properly, including career advancement in the form of promotion and the class of teachers and education staff is carried out smoothly following applicable school regulations.

A participant said as follows:

In all organizations, be it school institutions or other organizations, there are differences of opinion or what is commonly called conflict. However, as a leader, you must be able to manage and respond to these differences of opinion or conflict wisely. Of course, you have to explain in detail and detail what triggers these differences of opinion by asking parties who have different views and then listening to each party, and then providing a solution that must pay attention to the subject matter in the sense that it must be a win-win solution or take a middle ground so that the Principal becomes the judge and helps resolve these differences of opinion.

Principals at senior high schools are fully aware that differences of opinion are something that is sunatullah and must happen in every organization, be it educational institutions or other institutions, which is difficult to avoid. Still, as a headmaster at senior high schools, in addressing the differences that exist and occur in the school they lead, they always put forward a persuasive approach or approach that pays attention to parties with differing opinions. It is carried out in a way that touches on the problems that trigger differences of opinion. The Principal provides solutions that certainly make parties with differing views feel relieved. And leaders can indeed manage differences of opinion. They can also offer alternative ways to properly reconcile parties with different opinions by taking a middle ground so that all feel cared for.

B. Efforts of the Principal in Improving Teacher Professionalism

The Principal has an essential role in producing a professional teacher. The teacher also determines where the direction and, at the same time, the goals of students. The task of the Principal as a leader and, at the same time, as a supervisor is to assist teachers in schools to develop their profession and, at the same time, help teachers to be able to see the problems they face both in class and outside the classroom.

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The skills of school principals in managing and empowering educators and education staff impact the quality of the professional development of Educators and Education Personnel. Building collaboration and cooperation between staff and reviewing and evaluating staff performance are examples of developing and empowering teachers. This is very important to support excellent service to all students to improve their learning achievement significantly. By having this skill, the Principal can optimally manage and empower teachers.

In increasing the professionalism of teachers of Islamic Religious Education, school principals must have various efforts and strategies so that the school's direction and goals can be achieved and improve school quality. The Principal is an educational leader whose position is crucial in the school environment because the Principal is more closely and directly related to implementing every education program in the school.

Therefore, school principals are required to have various abilities, both abilities related to management and leadership issues, to be able to develop and advance their schools effectively, efficiently, independently, and productively. Whether or not an educational program can be implemented and whether or not the educational goals are achieved depends on the skills and wisdom of the Principal as an educational leader. For more details, it can be seen in the results of interviews with high school principals who revealed that:

Efforts were made to increase the professionalism of Islamic Religious Education teachers, namely, empowering the competencies possessed by teachers, and subject teacher deliberations held training, which training is one of the coaching techniques to add insight/knowledge of teachers, especially Islamic Religious Education teachers and provide opportunities for teachers, especially Islamic Religious Education teachers to improve their knowledge and skills by studying at a higher level of education. Training activities must be carried out by teachers of Islamic Religious Education, followed by follow-up efforts to apply the training results. Furthermore, namely joining the certification program, the certification reflects the existence of a fit and proper test that must be carried out by a teacher against the ideally set criteria.

The explanation presented by the respondent above is related to the efforts of the Principal in increasing teacher professionalism by the Principal both from empowering the competencies possessed by Islamic Religious Education teachers, teacher deliberation groups, and conducting training, where this training is one of the coaching techniques to add insight/knowledge of teachers, especially Islamic Religious Education teachers and providing opportunities for teachers, to improve their knowledge and skills by studying at a higher level of education. Furthermore, the vice principal of curriculum revealed that:

The efforts of school principals have a massive role in increasing their professionalism, workshops, and upgrading, where this workshop is an attempt to develop the ability to think and work together on both theoretical and practical issues to improve the quality of life in general and quality in terms of work. In addition, the school is working with the tilawati foundation to enhance the Qur'an reading skills of Islamic Religious Education teachers.

The efforts of the school principal in increasing the professionalism of Islamic Religious Education teachers in Senior High Schools are pretty good due to the explanation from the respondents above who have participated in programs including Subject Teacher Consultations, Training activities, upgrading, and workshops which should be carried out to increase the professionalism of Islamic Religious Education teachers. Then the Islamic Religious Education Teacher revealed that:

Efforts are being made to increase the professionalism of Islamic Religious Education teachers, namely involving teachers in workshops and seminars on the professionalism of Islamic Religious Education teachers, then holding training. This training is a process of developing and directing knowledge and skills, attitudes, and behavior that can be planned to meet current and future needs. Participate in subject-teacher deliberations and evaluations by the school principal to determine how far teachers in Islamic Religious Education understand and master the subjects they teach.

The Principal's efforts to improve teacher professionalism are empowering the competencies possessed by teachers in subject-teacher meetings, which is the purpose of holding subject-teacher meetings to strengthen the competence of working group participants in carrying out the learning process in a sustainable manner. Besides that, by holding subject teacher deliberations, teachers can also improve their professionalism.

V. CONCLUSIONS

Three types of leadership are owned and implemented by the three high school principals: democratic, laissez-faire, and transformative, and all of them are well-implemented except laissez-faire.

Efforts or policies made by the three school principals in increasing the professionalism of Islamic Religious Education teachers, namely: empowering the competence possessed by teachers, participating in subject teacher deliberations, conducting training, upgrading, and workshops, evaluating/supervising, conducting meetings, providing opportunities for Islamic Religious Education

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teachers, completing facilities and infrastructure, providing motivation and has been carried out well following expectations, although not all have been fulfilled.

REFERENCES

- 1) Alamsyah, Moh Ayuub, Pettalongi, Sagaf S, & Nurdin, Nurdin. (2023). *Peran Teknologi Pendidikan Dalam Meningkatkan Minat Belajar Siswa Di Era Society 5.0*. Paper presented at the Prosiding Kajian Islam dan Integrasi Ilmu di Era Society (KIIIES) 5.0, Palu.
- 2) Arif, Arifuddin M, Nurdin, Nurdin, & Elya, Elya. (2023). Character Education Management at Islamic Grassroot Education: The Integration of Local Social and Wisdom Values. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam*, 7(2), 435-450.
- 3) Beerbohm, Eric. (2015). Is Democratic Leadership Possible? *American Political Science Review*, 109(4), 639-652. doi:10.1017/S0003055415000398
- 4) Caillier, James Gerard. (2020). Testing the Influence of Autocratic Leadership, Democratic Leadership, and Public Service Motivation on Citizen Ratings of An Agency Head's Performance. *Public Performance & Management Review*, 43(4), 918-941. doi:10.1080/15309576.2020.1730919
- 5) Carmeli, Abraham, Sheaffer, Zachary, Binyamin, Galy, Reiter-Palmon, Roni, & Shimoni, Tali. (2014). Transformational Leadership and Creative Problem-Solving: The Mediating Role of Psychological Safety and Reflexivity. *The Journal of Creative Behavior*, 48(2), 115-135. doi:https://doi.org/10.1002/jocb.43
- 6) De Cremer, David. (2006). Affective and motivational consequences of leader self-sacrifice: The moderating effect of autocratic leadership. *The Leadership Quarterly*, 17(1), 79-93. doi:https://doi.org/10.1016/j.leaqua.2005.10.005
- 7) Gastil, John. (1994). A Definition and Illustration of Democratic Leadership. *Human Relations*, 47(8), 953-975. doi:10.1177/001872679404700805
- 8) Hikmah, Hikmah, Dzakiah, Dzakiah, Yanti, Anita Novi, Haryanto, Dedi, & Nurdin, Nurdin. (2023). Education Marketing Strategy through Social Media at Khalifah Islamic Elementary School Palu, Indonesia. *International Journal of Multidisciplinary Research and Analysis*, 6(7), 3119-3126.
- 9) Jumahir, Jumahir, Nurdin, Nurdin, Pettalongi, Adawiyah, Fitri, Anindya, & Aftori, Rohmatika. (2023). Religious Culture Implementation in State Islamic Senior High School in Indonesia. *Research and Analysis Journal*, 6(2), 19-26.
- 10) Kort, E. D. (2008). What, after all, is leadership? 'Leadership' and plural action. *The Leadership Quarterly*, 19(4), 409-425. doi:https://doi.org/10.1016/j.leaqua.2008.05.003
- 11) Muhaimin, Alif, Nurdin, Nurdin, & Alhabsyi, Firdiansyah. (2023). *Ilmu Pengetahuan dan Teknologi Menurut Pandangan Islam*. Paper presented at the Kajian Islam dan Integrasi Ilmu di Era Society (KIES) 5.0, Palu.
- 12) Nurdin, Nurdin. (2023). *Tantangan Guru Dimasa Industri 4.0: Pengetahuan dan Ketrampilan Baru*. Paper presented at the Kajian Islam dan Integrasi Ilmu di Era Society (KIES) 5.0, Palu.
- 13) Nurdin, Nurdin, Agam, Muhammad, & Adawiyah, Adawiyah. (2023). *Geographic Information System Continuance Adoption and Use to Determine Bidikmisi Scholarship Recipients Distribution*. Paper presented at the Proceedings of the 2022 International Conference on Computer, Control, Informatics and Its Applications, Virtual Event, Indonesia. https://doi.org/10.1145/3575882.3575953
- 14) Nurdin, Nurdin, Pettalongi, Sagaf S, Ahsan, Muhammad Nur, & Febrianti, Vindy. (2023). Factors affecting students' continuance intention to use teaching performance assessment application from technology continuance theory. *International Journal of Electrical and Computer Engineering (IJECE)*, 13(5), 5342-5353.
- 15) Nurdin, Nurdin, Scheepers, Helana, & Stockdale, Rosemary. (2022). A social system for sustainable local e-government. *Journal of Systems and Information Technology*, 24(1), 1-31. doi:10.1108/JSIT-10-2019-0214
- 16) Nurdin, Nurdin, Stockdale, Rosemary, & Scheepers, Helana. (2013). *The Use of Social Media to Gather Qualitative Data: A Case of Government E-Procurement Implementation and Use*. Paper presented at the 24th Australasian Conference on Information Systems (ACIS)
- 17) Nurfaiah, Nurfaiah, Nurdin, Nurdin, & Alhabsyi, Firdiansyah. (2022). *Management of Al-Qur'an Learning at One Day One Juz Palu Community*. Paper presented at the Proceeding of International Conference on Islamic and Interdisciplinary Studies, Palu.
- 18) Rahmawati, Rahmawati, Nurdin, Nurdin, & Pettalongi, Adawiyah. (2022). *Science Learning Methods in Kindergarten Schools (Study at Khalifah Kindergarten in Palu City 2021)*. Paper presented at the Proceeding of International Conference on Islamic and Interdisciplinary Studies, Palu.

Schools Leadership in Improving Islamic Education Teachers' Professionalism in Poso Regency

- 19) Silins, Halia, & Mulford, Bill. (2002). Leadership and School Results. In Kenneth Leithwood, Philip Hallinger, Gail C. Furman, Kathryn Riley, John MacBeath, Peter Gronn, & Bill Mulford (Eds.), *Second International Handbook of Educational Leadership and Administration* (pp. 561-612). Dordrecht: Springer Netherlands.
- 20) Terehoff, Irina I. (2002). Elements of Adult Learning in Teacher Professional Development. *NASSP Bulletin*, 86(632), 65-77. doi:10.1177/019263650208663207
- 21) Zaid, Zaid, Pettalongi, Sagaf S, & Nurdin, Nurdin. (2022). Implementation of School-Based Management in Improving the Quality of State Islamic Junior High School. *International Journal of Social Science and Human Research*, 5(8), 3448-3455.



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An Overview of Quantitative Research Methods

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ABSTRACT: The phrase "research" refers to seeking knowledge. It is a scholarly and systematic search for relevant knowledge on a specified subject. The Oxford Learner's Dictionaries defines "Research" as "A careful study of a subject, especially to discover new facts or information about it". Research is a philosophy of systematic study that critically investigates several aspects of professional work, including development of prominent concepts that manage a particular process, and development and analyse novel theories. In accordance with Woody (1927), research includes identifying research problem, creating hypotheses, collecting, analysing, and assessing data and making inference. As a result, research is a distinctive contribution that advances the current knowledge via investigation, observation, comparison, and experimentation. To put it in a nutshell, research is the pursuit of knowledge through a methodical approach to problem-solving.

KEYWORDS: Quantitative Research, Research Methodology, Quantitative

INTRODUCTION

It is an essential question to know What motivates people to conduct research? According to Kothari (2004), the following reasons might encourage people to do research however they are not a complete list of the variables that motivate people to participate in research projects.

- To obtain a research degree, as well as the benefits that come with it
- To deal with the challenges the unsolved problems, i.e., apprehension about real-world problems originates research
- To experience the intellectual pleasure of completing some creative task
- To offer a service to society
- To get respectability

The three common approaches for conducting research are a qualitative method, quantitative method, and mixed methods.

Qualitative research involves the quality of data and aims to understand the explanations and motives for actions, and also the way individuals perceive their experiences and the world around them. Qualitative research creates perceptions into a problem's context and provides ideas and hypotheses. Quantitative research seeks to establish a knowledge and understanding of numerous assumptions that have been developed in a study. Thus, during the planning and designing phases, it involves a cycle of consecutive phases of hypothesis formation and creativity, discipline, and patience.

Quantitative research involves quantifying things and asks questions such as "how long," "how many," and "the degree to which." Quantitative research aims to quantify the data and generalize findings from a sample of a study from varied perspectives. It requires collecting data, analyzing, and interpreting quantifiable data to prove the hypothesis produced in a specific study. Quantitative research relies on data collection and data analysis which is based on a logical method with the focus on testing theory, influenced by empiricist and positivist ideologies (Bryman, 2016). Quantitative research describes the specific qualities and rather important differences to generate conclusions in research. Therefore quantitative research creates more consideration about the problem. The key features of quantitative research are as follows:

- Collecting data by utilizing standardized research instruments.
- Findings are based on larger sample sizes.
- Reporting the research because of high reliability.
- Responding to research questions and meeting the research objectives.
- Planning all research phases before data collection.

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- Concerning statistics, reasoning, logic, and an objective viewpoint that researchers use tools such as questionnaires to collect numerical data. It is emphasizing numerical and statical data which will be presented in non-textual forms like tables, charts, figures, or others.
- Identifying characteristics and building statistical models for explaining the observation is the main goal of quantitative research.

1. Characteristics of Quantitative Research

Quantitative or qualitative research is being chosen based on the type of the topic, research questions, and research problem. Then the selected method determines the exact research design and procedures such as the sample of the research, data collection instruments, data analysis, and final result interpretation. According to Creswell (2002) the major characteristics of quantitative research are:

- Describing a problem statement by presenting the need for an explanation of a variable's relationship.
- Offering literature, a significant function by answering research questions, explaining the research challenges, and generating a demand for the research direction
- Creating precise, quantifiable, observable purpose statements, research questions, and hypotheses
- Collecting numerical data from a sample of the study by using instruments
- Using statistical analysis for analyzing patterns, comparing groups, or connecting variables, then finding interpretation by comparing them to previous research and predictions
- Providing the unbiased study report by utilizing standard frameworks and assessment standards, while remaining impartial and unbiased

The researcher in quantitative research selects a study problem based on patterns to clarify the reason something happens. Explaining a trend indicates that the research problem may be addressed when the researcher attempts to identify common tendency of responses from people and to observe the differentiation of tendency between individuals.

In quantitative research, findings can inform how a big population perceives a problem, as well as the diversity of those perspectives. Some quantitative research problems, on the other hand, demand the researcher to describe how one variable impacts another variable. Variables are characteristics of people or attributes that researchers investigate. The quantitative researcher is interested in discovering the influence of one variable on another variable. Generally, the literature review has a significant role in quantitative research by explaining the necessity for the research problem and providing prospective study goals and research questions.

Justifying the research problem entails using the literature to demonstrate the significance of the topic under consideration. So, quantitative researchers are supposed to search the literature to discover some research to identify the investigated topic and then reference these literatures in the introductory parts of a report.

To acquire measurable and observable data about variables, quantitative researchers should ask particular and restricted questions to identify a few variables. A tool to measure, monitor, record quantitative data that includes particular options for questions and answers that the researcher designed is an instrument. The survey, standardized exams, and checklists are examples of research instruments that researchers could use for conducting research and collecting data in the format of numbers.

In quantitative data analysis, the researcher uses mathematical techniques known as statistics to analyze the data. These analyses entail segmenting the data for answering the research questions. Using statistical techniques, like groups comparison, offer data to help answer hypotheses and also research questions. The research findings must be interpreted. The researcher should interpret the analysis to explain not only the research finding but also in what way the result support or reject the study's anticipated predictions.

2. Objectives of Quantitative Research

The research goal is finding responses to problems and questions via using scientific techniques. However, each research project has its particular aim. Kothari (2004) classifies research objectives into the following general categories:

- Exploratory or Formulative Research: To become acquainted with a phenomenon or to acquire novel insights about it
- Descriptive Research: To correctly depict the qualities of a certain individual, group, or situation

Quantitative research is classified into four types:

1. Experimental Research
2. Correlational Designs
3. Descriptive Research
4. Causal-Comparative/Quasi-Experimental Research

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2.1. Experimental Research

Experimental research comprises of a hypothesis and variable, which can be measured, calculated, and compared in a controlled environment. The purpose of experimental research is to discover a correlation and relationship between the dependent variable and independent variable. Data in an experimental study must be quantifiable or measured. It is also known as intervention research or group comparison research. It is a technique used in quantitative research to assess if an activity or materials affect participant outcomes. The researcher measures the effect by assigning a single set of actions to one group, which is called intervention, and denying the set of actions to the other group.

Developing a set of methods to test a hypothesis means experimental design. A successful experimental design necessitates a thorough grasp of the system under study. The first step will be started with considering the variables and their relations. In the second step, the researcher will make explicit and testable predictions. Third step will demonstrate not only the level of details but also the external validity of findings base on how precisely the researcher modifies independent variables. In the fourth step, the internal validity of the experiment will be determined by the researcher's decisions on randomization, experimental controls, as well as between vs. within-subjects designs.

2.2. Correlational Designs

The purpose of correlational research is to identify variables that have a connection in a way that a change in one affects a change in the other. In this type of design researcher examine two variables to demonstrate if there is a statistically considerable relationship between them without manipulating them, for example, the relationship between diet and anxiety. Unlike experimental research, which is fully based on scientific technique and hypothesis, this sort of study is descriptive. There are three forms of correlational study as:

- Positive correlational research
- Negative correlational research
- No correlational research

The direction of a correlation can be either positive or negative.

2.3. Descriptive Research

In nature, descriptive research could be either quantitative or qualitative. This kind of research involves quantitative data that can be collated in numerical form, like test scores or the amount of times an individual use a specific feature of a multimedia program, or it can explain categories of data, like gender or patterns of communication while using technology in a group setting.

According to Hopkins and Weeks (1990) quantitative research describes the specific qualities and rather important differences to generate conclusions in research. Therefore quantitative research creates more consideration about the problem. Descriptive research aims to accurately describe a population, situation, and phenomenon and the characteristics which are more concerned with "what, where, and when" rather than "why" something has happened. Because before researching why something happens, there is a need to understand how, when, and where it happens.

According to Gall and Borg (1989) descriptive studies are intended to discover "what is". Therefore, for collecting descriptive data, observational and survey methods are frequently being used. It frequently uses visual aids like either graphs or charts to assist the audience in comprehending the data distribution. The reason is that the human brain is incapable of extracting a large quantity of original data so descriptive statistics data is reducing to digestible and manageable format. In contrast to experimental research, the researcher does observation and measurement and does not manipulate the variables.

The best technique for discovering characteristics, frequencies, trends, and categories is descriptive research. For having a valid and reliable result it is essential to have a developed research design. Descriptive research can be carried out using particular data collection methods and it provides a comprehensive understanding of a research problem. The advantage of the descriptive method is that it allows the study to be performed in the respondent's natural context that not only certifies high-quality data but also represents data collection from a large population. The three main types of descriptive research are:

- Survey
- Case study
- Observation.

2.3.1. Case Study

This kind of research includes a detailed analysis of a person or group of people. Case studies can lead the researcher not only to test hypotheses but also investigate unusual phenomena. Case studies should not explain cause and effect because of limitations in making reliable predictions.

If a scholar studies a particular phenomenon coming from a distinct entity, a single-case study is required and allowing for deep learning of the single phenomenon and requiring the collection of multiple various forms of data. Various case research study

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enables a scholar to gain a deep understanding of the cases by drawing a comparison between similarities and differences of the individual cases embedded inside the quintain. The confirmation from multiple-case studies is stronger and more trustworthy than confirmation from single-case studies because it demonstrate a more in-depth examination of research questions and the development of theories (Stake, 2013).

2.3.2. Observation

All research includes some form of observation, which might be quantitative or qualitative. A quantitative observation requires data collection in numerical form and should be interpreted in terms of a number. In quantitative observations, statistical survey data is being used for analysing. Researchers observe participants in a naturalistic environment from a distance. Because the sample of the study is in the natural environment, the observed characteristics are enriching and provide additional information. Additionally, it produces more ecological validity than in comparison to laboratory observation. The extent to which research may be used in real-world circumstances is referred to as ecological validity. Before developing testable hypotheses, models, or theories, the researcher needs to observe and describe the subject under study systematically.

2.3.3. Survey

Survey research is a quantitative approach in which the researcher distributes a series of questions to a sample of research. It is especially beneficial when a researcher wants to describe the characteristics, attitudes, behaviors, and opinions of a large population. The analysis phase interoperates statistical data to conclude proving or disproving hypotheses. Respondents reply through questionnaires, surveys, or polls in survey research. Research to collect precise and effective data should have the proper survey questions with open-ended and close ended-questions. The survey method can be used either online or offline with enormous sample size. In a survey, a sample is a subsection of people chosen from a population. Therefore, the researcher studies the sample then searches to communalize the results to the population. One of the advantages of using a survey is that the researcher can collect data from a sample of respondents from a large population. Analysis of large datasets properly represent the population's diversity and rather data collection can be generalized to the larger population with more reliability than the data collected through a case study. The two forms of survey that can be used based on the time and the type of data are:

- Cross-sectional survey
- Longitudinal survey

2.3.3.1. Cross-sectional Survey

These kinds of surveys are observational surveys that apply when the researcher plans to collect data from a sample of the target group at a specific time. A quantitative researcher can assess several variables at a specific time. In a cross-sectional survey data collection is from individuals who show similarity in all variables except those chosen for study. Multiple samples can be analyzed and compared by conducting a cross-sectional survey. Longitudinal surveys are the inverse of cross-sectional studies. In cross-sectional studies data collection will be from many subjects at once, on the other hand, in longitudinal studies data collection will be continued from the same subjects throughout time, generally concentrating on a smaller group of individuals with similar feature.

2.3.3.2. Longitudinal surveys

Longitudinal surveys are called observational surveys in which researchers evaluate the same individuals continue to discover any changes that may occur over time. This kind of survey is substantially used not only in the area of medicine and applied sciences but also in the market trend for analyzing customer satisfaction or gathering feedback on products or services. Longitudinal studies are a type of correlational research. In this kind of study, the researcher observes and collects data on several variables without trying to influence them which can be found in the economy, social or medical sciences. Figure 2 shows the differences between these two types of surveys.

2.4. Causal-Comparative/Quasi-Experimental Research

This kind of research attempts to identify cause-and-effect relationships between the variables which are extremely similar to actual experiments but with few important distinctions. Therefore an independent variable is discovered but not modified, and the independent variable's effects on the dependent variable are being assessed. The groups are not being assigned randomly; the researcher needs to use naturally formed or pre-existing groups. The control groups will expose to the treatment variable then will be studied and compared. After analysing and making conclusions, determining causes must be done carefully, because known and unknown variables can affect the results.

3. Problem Statement

A research problem refers to a definite and concise statement concerning a source of problems that need to be remedied, challenges that need to be eliminated, or questions that exist in scholarly literature, theory, or existing practice and indicates the need for clear comprehension and purposive investigation (Bryman, 2007). The purpose of a problem statement is to present the

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significance of the topic being researched, suggest a clear statement on the purpose of the study, create a framework for reporting the findings. In quantitative research, a research problem needs to measure variables, determine the effect of these variables on a result, examine theories, and apply the findings to a large population. After identifying the research problem, the researcher needs to write problem statement part comprises (Creswell, 2002):

- Research topic
- Research problem
- Research problem authenticity as discovered in the previous studies should be justified
- Research gap in current knowledge concerning the research problem
- Research audiences who will advantage from a research problem

The researcher can simply comprehend introductions to research projects by identifying these five aspects.

4. Research Objectives

In any research project, a crucial task is to define the core objectives. In quantitative research, a research objective defines the aims and goals that the researcher intends to attain and it is the result of the research project after its implementation. It should be closely related to the problem statement and provide direction to the performance of the research. Before developing research objectives, the researcher should be updated in the research area and identify the knowledge gaps that need to be filled.

The focus of the quantitative research objective is concise, narrow, and measurable. The quantitative researcher needs to have a distinctly defined research question where answers are sought. The methodology of quantitative research should describe how each objective will be achieved. The research objectives should be directly connected to the problem statement, resulting in clear and attainable objectives. Research objectives act as a guide to determine suitable research design, problem statement, data collection procedure, analyze and interpret data and variables of the study. Therefore the research objectives need to be specific, measurable, achievable, realistic, and time-constrained. When the researcher can explain in simple terms what the research is about and why it matters, it shows the aims and objectives are concise and clear. There are some differences between the aims and the objectives of the research as:

- Aims of research describe what the researcher hopes to achieve, on the other hand, the objectives detail how the researcher intends to achieve aims.
- Aims of the research are relatively broad; on the other hand, the objectives are specific.
- Aims of a research focus on a project's long-term results; on the other hand, objectives focus on immediate and short-term outcomes.

The aim of the research is being followed by a series of statements explaining the research objectives, which indicate the research topic and problems in details.

5. Purpose Statement

A purpose statement states the research's purpose, scope, and direction that directly addresses the problem and closes the stated gap. It notifies the reader what to anticipate from the study and what the precise focus will be. The researcher needs to write the purpose statement in a single phrase and start it with keywords like "The purpose of the study ...". In this phase, the researcher should state how the theory will be tested. In the purpose statement, the words relate, compare, or describe should be used to show the relationship between variables. The researcher should specify not only the independent and dependent variables but also a sample and participants. Research objectives and purpose are being created by problem statement and the research gap. The purpose statements need to be clear and concise, flow from the problem statement and address the proposed problem, match the methodology, and answer the question 'Why the researcher is doing this research?'

6. Theoretical and Conceptual Framework

Quantitative researchers examine if the independent variable affects on the dependent variable because previous researchers indicate that this relationship exists. Some researchers discovered a theory that predicts how the dependent variable would be affected by an independent variable. The concept of probable causation states that rather than proving the relationship, researchers seek to demonstrate a cause-and-effect relationship between variables. In quantitative research, a theory predicts and describes the possible relationship between dependent variables and independent variables. For instance, the researchers investigate the relationship and effect of peer groups on teenagers. This connection is put to the test regularly basis, such as with religious organizations, middle schools, or high schools. Constantly the connection of a constructive and beneficial impact has been proven true. Eventually an individual labels this relationship and connection as a theory and determines a name (Creswell, 2002).

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By reviewing literature, the researcher will immediately realize that the problem statement of the research has its origins in a variety of theories that have been established from various views. The researcher is supposed to obtain data from different resources and sorts them under main theories. The foundation of the research problem is the conceptual framework which derived from the theoretical framework and regularly emphasizes the foundation of the study. While the theoretical framework includes theories or problems wherein the research is linked, the conceptual framework defines the components of the theoretical framework that the researcher chose to serve as the foundation of investigation. Consequently, the conceptual framework develops from the theoretical framework and is linked to the particular problem statement (Kumar, 2018).

7. Research Questions

As the name suggests, research questions are frequently grounded in research. Quantitative research questions are clear and include the sample of the study, dependent and independent variables, and the research design. They are typically completed at the beginning of the research (Berger, 2015). Research questions narrow the purpose statement to precise questions which need to pursue to find a response. The research question should begin with “how”, “what”, and “why”. For demonstrating the type of the variables, the researcher needs to use words like describe, compare, relate. Quantitative research has three methods of research question:

- Descriptive questions
- Relationship questions
- Comparison questions

7.1. Descriptive Questions

This type of question is using by the researcher to find out the answers of the samples of the study to a particular question. Descriptive questions typically begin with “what.”

7.2. Relationship Questions

A relationship question is used by the researcher to identify the relationship between two or multiple variables.

7.3. Comparison Questions

Comparison question helps to discover what differences exist between two or more groups of an independent variable in terms of one or more result variables.

8. Quantitative Hypotheses

One of the most essential phases in designing quantitative research is defining the research hypothesis. In quantitative research, hypotheses are specific, clear, and testable statements in which the researcher state a priori expectation about the result of research for example predicting the relationship between variables. A hypothesis is more than only a random guess; it should be founded on current theories, information, and knowledge. A hypothesis needs to be testable, which implies that the researcher must be able to support or disprove it by using scientific procedures such as tests, observations, experiments, and statistical data analysis.

In quantitative research, hypotheses restrict the purpose statement and offer a researcher’s prediction about expected findings (Creswell, 2002). The variables should be stated in the following order:

- First position; Independent variable
- Second position: Dependent variable
- Third position: Control variable

Hypotheses are classified into two types:

- Null hypotheses
- Alternative to null hypotheses

8.1. Null Hypothesis

The null hypothesis predicts that there is no relationship between the independent and dependent variable. For instance, “There is no difference between” groups or “There is no relationship between (or among)” variables might be used to tart a null hypothesis.

8.2. Alternative Hypotheses

If the null hypothesis is rejected, the alternative hypothesis is true as it suggests a relationship or a modification based on findings from previous studies, or a description or theory described in the literature.

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9. Literature Review

The literature review is the backbone of all types of research which includes a comprehensive summary of previous research on a topic. It should be enumerated, described, summarised, objectively evaluated, and clarified. Writing a quantitative literature review contains critically analyzing relevant research and publications. It needs to be started by searching for relevant literature, then evaluating the resources. After finding the gap, the researcher should outline the structure and finally write a literature review. By conducting a literature review the researcher demonstrates how the research adds to the current body of knowledge. At the beginning of a quantitative study, researchers discuss the literature to justify and emphasize the significance of the problem and give the rationale for the study's goal, hypotheses, or research questions. The literature needs to be used at the end of the research for confirming, disconfirming, contrasting, and comparing with past research results. According to Kumar (2018) the literature review can be done by the researcher in four ways:

1. Make the research problem clearer and more focused
2. Develop the research methodology
3. Expand the knowledge base in the field of study
4. Contextualize the results

10. Research Designs

The particular processes involved in the research process are known as research designs. The research design serves as the "blueprint" for the research investigation. These procedures include collecting data, analyzing data, and writing reports. Saunders research onions provide a comprehensive explanation of the steps of a research procedure. It demonstrates an efficient procedure for developing a research methodology. Saunders, Lewis, and Thornhill (2007) view the research process as the unwrapping of an onion layer by layer. The outer layers need to be unwrapped to view the inner layer. Accordingly for achieving objectives, the right steps have to be taken, it applies that the first step needs to be covered before proceeding to another step.

The researcher needs to know the significance and application of variables in order to develop purpose statements, research questions, and also hypotheses. In statistics and research, variables are items that the researcher can measure, observe, manipulate, and control. The value of a variable might vary either between groups or over time. For instance, if an individual's eye color is the variable in an experiment, its value can vary from brown to blue to green from person to person.

The term variable has a root that is linked to the word "vary," which should help to grasp what variables are. Variables are objects, things, or factors that have the ability to change, like the temperature, weight, and mood of a person. Variables might have varying values depending on the circumstances or for different persons. The major kinds of quantitative research are:

- Independent variables
- Dependent variables
- Sample variables.
- Extraneous variables

10.1. Independent Variable (IV)

An independent variable has a unique feature that cannot be changed by the other variables. For example, age is an example of an independent variable because the living place, the foods they eat will not affect their age. Independent variable has the potential to affect other variables. In a cause and effect question, independent variables are the variable that causes the effect.

10.2. Dependent Variable (DV)

The dependent variables are impacted by the independent variables as they are the outcome of the impact of the independent variables, so it is a variable that receives the intervention. For example, a grade on an exam is a dependent variable as it depends on factors such as how long you studied. Because studying time affects test score on the other hand test score does not affect test score.

10.3. Quantitative Variable

A quantitative variable represents a measure and it is numerical like height, distance, or number of items. Quantitative variables are divided into two types:

- Discrete variable
- Continuous variable

10.3.1. Quantitative Discrete Variable

A quantitative discrete variable is any numerical variable that can be counted, as a number of children per family or the number of teachers in a school. It cannot be broken into fractions and decimals. For example, you cannot buy half a ticket.

10.3.2. Quantitative Continuous Variables

Quantitative continuous variables is numerical variables that cannot finish counting, like time, temperature, weight. It can be broken down into fractions and decimals.

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11. Reliability and Validity of Instruments

The conceptualization of reliability and validity employed to assess the research's quality shows the accuracy of a methodology in measuring something. Reliability is about the consistency of a measure, and validity is about the accuracy of a measure. While the researcher develops a research design, planning methodology, and outlining the findings, it is critical to consider reliability and validity.

Reliability refers to a method which consistency measures something. If consistently the same findings are achieved by utilising the same method, the measurement is reliable.

Validity refers to a method which precisely measures something. A high validity research provides findings that correlate to genuine features and variances in either the physical or social reality. High reliability represents a measurement is valid or not and if a method is not reliable, it probably is not valid.

11.1. Assessing the Reliability and Validity

Reliability can be determine by comparing several versions of the same measurement. It is more difficult to assess the validity but it can be determine by comparing the findings to other accurate theory and data.

11.2. Types of Reliability

Reliability refers to the consistency of a measure which includes three main types:

- **Test-retest** evaluates the consistency of a measure over time
- **Interrater** evaluates the consistency of a measure among observers
- **Internal consistency** evaluates the consistency of the measurement

11.3. Types of Validity

Validity is described as the degree that a concept is precisely measured and evaluated in quantitative research which includes three main kinds of validity as:

- **Construct:** The conformity of a measure to established theory and knowledge of the concept being evaluated.
- **Content:** The extent to which the measurement encompasses all features of the concept being measured.
- **Criterion:** The extent to which a measure's outcome conforms to other valid measurements with the same concept.

12. Sampling Design

The method of selecting the sample size has a major impact on the accuracy of findings. The goal of sampling in quantitative research is to make conclusions about the group the researcher collect a sample in an unbiased way through randomization which represents the population from where it is selected (Kumar, 2018).

A quantitative researcher is led by a predefined sample size depending on available resources, research style, and the possible use of the results. The large sample size is highly valued in research that aiming to create policies, to assess the relationship, or to establish impact evaluations because a larger sample size encompassing different backgrounds and ensuring that the sample is demonstrating the research population. According to Kumar (2018), the sampling design can be categorised as:

- Random/probability sampling designs
- Non-random/non-probability sampling designs
- Systematic/mixed sampling design

Every component in the population needs to have an equivalent and independent probability of being selected in the sample in **random sampling or probability sampling designs**. The most common methods for selecting a random sample are (Kumar, 2018):

- Fishbowl draw
- Computer program
- Table of randomly generated numbers

Non-random or non-probability sampling designs is employed when the number of components in a population is unknown or cannot be exclusively recognised. The most common methods for selecting a non-random sample are (Kumar, 2018):

- Quota sampling
- Accidental sampling
- Judgemental sampling or purposive sampling
- Expert sampling
- Snowball sampling

Systematic/mixed sampling design has the features of random and non-random sampling designs. In this type of design, the sampling frame needs to be distributed into segments called intervals. Then, the SRS approach is used to choose one element from the first interval. The arrangement of the element selected in the initial interval determines which subsequent elements are

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chosen from other intervals. If the fifth element is used in the first interval, it will also be used in the fifth interval after that. The selection of an element from the first interval is made randomly, but the selection of elements from succeeding intervals depends on the selection from the first and cannot be regarded as a random sample (Kumar, 2018).

13. Data Collection

“Research tool” or “Research instrument” is a means of collecting data in research, like questionnaires, interviews, and observation. The quantitative process of data collection includes:

- Defining the participants or sample of research
- Getting authorizations from organizations or individuals
- Determining what type of data to collect
- Selecting research instruments
- Directing the data collection procedure

14. Select a Statistical Program

Quantitative researchers typically utilise statistical programmes that are accessible as laptop or desktop software or on university computers. It is suggested to search for a programme that has the statistics that are suitable to answer research questions and research hypotheses. A lot of websites provide extensive information on the several statistical analysis computer applications that are available.

15. Data Analysis

In the process of analyzing quantitative data, multiple interconnected processes are employed.

The first stage is organizing the data for analysis. It includes choosing in what way give numerical scores to the data, evaluating the categories of scores, taking statistical software, and entering the data into the computer.

The second stage is analyzing the data. Typically, a descriptive analysis of the data reports the measurements of central tendency and also variance. Subsequently, more complicated inferential analysis is performed to test the hypotheses and evaluate confidence intervals and effect sizes.

The third stage is reporting the research outcome not only through tables, figures but also through discussing, summarizing, and comparing the results with previous theories and literatures. It should be ended with the limitation of the research and recommendation for future research. After preparing and organizing the data, the data needs to be analyzed to address all questions and hypotheses of the study (Creswell, 2002).

15.1. Descriptive Statistic

A descriptive statistic is utilized in research to investigate the essential characteristics of the data by summarizing the samples and measurements. Descriptive statistics are used to convert complicated quantitative information into bite-sized explanations. It allows the researcher to present the data and interpretation in a comprehensible and meaningful way. Descriptive statistics include (figure 6):

- Distribution refers to the frequency of each value.
- Central tendency refers to the averages of the values (mean, median, and mode)
- Variability (spread) refers to how spread out the values are (standard deviation, variance, minimum and maximum variables, kurtosis, and skewness)

15.2. Inferential Statistics

In inferential statistics, the researcher collects the data from a sample of the study and make a prediction that affects the results on a large population. The researcher uses inferential statistics to achieve results that are beyond the immediate data. Although descriptive statistics can just describe the characteristics of a sample, on the other hand, inferential statistics utilize a sample to make accurate estimates about the wider population. When using inferential statistics, it is necessary to employ random and unbiased sampling procedures. If the sample does not represent the population, then having valid statistical inferences is not possible.

16. Reporting, Evaluating and Conclusion of Research

A research report is a conducted research that details the following steps:

- Investigating and exploring of problem
- Identifying research questions
- Collecting data
- Analysis and interpreting data

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As the report is combined for different audiences, it differs in length and format and varies for quantitative and qualitative research. Reporting research entails selecting an audience, organizing the report in a compatible arrangement with target audiences, and subsequently preparing the report. For each audience, the arrangement of the research report will differ, ranging from a formal and official arrangement for writing project paper and dissertations to a casual arrangement for writing school reports (Creswell, 2002). Researchers have to be courteous in all sorts of reports and avoid using terminology that distinguishes sexual preference, gender, ethnicity, and racial background. The audiences will also have their criteria for assessing and evaluating the value of the study. Assessing research is analyzing the value and quality of research through of standard educational criteria that are proposed by individuals. According to McNabb (2017) the researcher is supposed to report all following steps while reporting the findings of quantitative research:

- Data collection, statistics, and relevant finding to problem statement needs to be explained.
- Unexpected incidents during data collection needs to be reported. The researcher is supposed to clarify why missing data does not undermine the validity of the analysis.
- A rationale for using statistical procedure needs to be provided.
- When a researcher use inferential statistics, provide the descriptive statistics, confidence intervals, and sample sizes for each variable as well as the value of the test statistic, its direction, the degrees of freedom, and the significance level.
- Using tables provide exact values and utilising figures convey global effects. the reader needs to be concise what to look for in tables and figures. The researcher encouraged to use graphic representations of confidence intervals.

The researcher is supposed to ending the research by giving a summary of the topic and providing a final comment and evaluation of the research. The summary of findings, recommendations, and future research needs to be included (Nenty, 2009).

CONCLUSION

In the study of Hall, Ward, and Comer (1988), a team of judges assess 128 educational quantitative papers and concludes that the researcher needs to consider rigorous reliability and validity in data collection techniques, strengths in research designs, appropriate research design for the problem, reasonable sampling, clearly report the findings of analysis, appropriate methods to analyze data, clear writing, clearly stated assumptions, and clear data collection methods to have a quality quantitative research.

REFERENCES

- 1) Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative research*, 15(2), 219-234.
- 2) Bryman, A. (2007). The research question in social research: what is its role? *International journal of social research methodology*, 10(1), 5-20.
- 3) Bryman, A. (2016). *Social research methods*: Oxford university press.
- 4) Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative*: Prentice Hall Upper Saddle River, NJ.
- 5) Gall, M. D., & Borg, W. R. (1989). *Educational research. A guide for preparing a thesis or dissertation proposal in education*: ERIC.
- 6) Hall, B. W., Ward, A. W., & Comer, C. B. (1988). Published educational research: An empirical study of its quality. *The Journal of Educational Research*, 81(3), 182-189.
- 7) Hopkins, K. D., & Weeks, D. L. (1990). Tests for normality and measures of skewness and kurtosis: Their place in research reporting. *Educational and Psychological Measurement*, 50(4), 717-729.
- 8) Kothari, C. R. (2004). *Research methodology: Methods and techniques*: New Age International.
- 9) Kumar, R. (2018). *Research methodology: A step-by-step guide for beginners*: Sage.
- 10) McNabb, D. E. (2017). *Research methods in public administration and nonprofit management*: Routledge.
- 11) Nenty, H. J. (2009). Writing a quantitative research thesis. *International Journal of Educational Sciences*, 1(1), 19-32.
- 12) Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research methods. Business Students 4th edition* Pearson Education Limited, England.
- 13) Stake, R. E. (2013). *Multiple case study analysis*: Guilford press.
- 14) Woody, C. (1927). The values of educational research to the classroom teacher. *The Journal of Educational Research*, 16(3), 172-178.



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Exploring Language Variation in Internet Buzzwords: A Case Study of the Phrase "Officially Diagnosed as XX"



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ABSTRACT: Internet buzzwords, characterized by their interactivity and permeability, serve as indicators of the shifting emotional landscapes and emotional appeals of netizens within distinct temporal contexts. However, these buzzwords remain far from stagnant, continually undergoing linguistic variations influenced by the psychological dispositions of users and the ever-shifting environmental backdrop. In this case study, a comprehensive exploration of linguistic variation within internet buzzwords is undertaken, focusing intently on the dynamic phrase "officially diagnosed as XX" and its profound reflection of prevailing social mentalities and linguistic motivations. Guided by the conceptual framework of eco-linguistics, which offers a lens for comprehending the economic underpinnings of language and rationalizing the phenomena of internet buzzwords, this study delves into an intricate analysis. By meticulously dissecting online datasets and user commentary, the study unveils the multifaceted employment of "officially diagnosed as XX" as an instrument to articulate an array of emotions and cognitive states, ranging from humor to frustration and even self-deprecation. Through the prism of language evolution in the digital era, the study engages in a scholarly discourse on the intricate phenomenon of linguistic variation within the realm of internet discourse. Ultimately, this research not only illuminates the intricate dynamics between language, society, and technology in the contemporary age but also advances our comprehension of the profound interplay between language, emotion, and human communication within the digital realm.

KEYWORDS: language variation; Internet buzzwords; social mentality; language motivation

I. INTRODUCTION

Internet language refers to various forms of language used by netizen in online communication, and with the increase in the number of users, the phenomenon of linguistic variation has occurred in Internet language. Internet buzzwords are a special phenomenon in the development of Internet language (Liu, 2023). In the Internet era, it is an inevitable trend that the language of Internet buzzwords and popular phrases changes and mutates in the process of use. From the familiar "Tang Ping", "Nei Juan", "666" to the recently emerging "be officially diagnosed as XX", these Internet buzzwords and catchphrases are widely sought after. "Diagnose" is a medical term meaning a definitive diagnosis, and has been widely seen in recent years in connection with the Covid-19. Recently, "be officially diagnosed as XX" has been modeled and used by netizen, who use the buzzword not to say that they have been diagnosed with some disease, but to express their mental state and emotions through metaphorical means, in order to arouse some kinds of associations, concerns, and thoughts among the audience. At this point, "be officially diagnosed as XX" has undergone a linguistic variation, which is netizen' innovative use of "diagnose". Internet buzzwords are communicative discourses that carry common social mentality, emotion and cognition, reflecting netizen' concerns and feelings about social life (Li et al., 2020). The variation of this Internet buzzword also implies the social mentality and emotional needs of netizen. Therefore, this paper will analyze the recently widely circulated "be officially diagnosed as XX" from the perspective of language variation, and explore the linguistic motivation of its variation and the social mentality of netizen who are willing to imitate and continue to create this buzzword.

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II. LITERATURE REVIEW

2.1 Definition of Language Variation

Language variation is an important branch of sociolinguistics, and scholars hold different views on the definition of language variation. Shi (1999) pointed out that language variation refers to the changes in the structural elements and their relationships of linguistic phenomena and language systems with the changes in communicative requirements and structural functions. According to Chai (2005), language variation refers to the changes in language caused by language users who deliberately deviate from the linguistic norms and use language creatively under specific occasions or linguistic environments. According to Guo (2006), language variation is the difference in the use of language by communicators due to the constraints of non-linguistic elements, i.e., exogenous factors, and homogeneous linguistic elements, i.e., endogenous factors, in verbal communication activities. You and Zou (2016) believed that language variation refers to the change of a certain linguistic phenomenon in the actual use of the language. The above scholars have defined language variation from different perspectives, but they all point out that the essence of language variation is the recreation of language. In the process of language use, the phenomenon of language variation is ubiquitous.

2.2 Research on Internet Buzzwords

Internet buzzwords are forms of language that are imitated, copied and used by netizen when they communicate on the Internet (Zhang & Jiang, 2011), and this form of language is widely recognized and used by netizen. Many scholars have conducted research on the English translation, the translation strategies and the motivation of Internet buzzwords, and the characteristics of their dissemination. Hu (2019) summarized the main viewpoints of buzzword research in the past decade and explored its research content and basic stance from the perspectives of linguistics, translation, sociology, and pedagogy. Li (2022) used the three-dimensional transformation method (linguistic, cultural, and communicative dimensions) to study the English translation of 2020 Internet buzzwords under the guidance of the theory of Eco-translatology. Similarly, Guo (2018) also focused on the translation research of Internet buzzwords, and explored the translation strategy of translation of Internet buzzwords under the perspective of memetics. Although the translation of Internet buzzwords has been paid attention to by many scholars, research on the extension of the meaning of network buzzwords still should be improved. Guided by the principle of recognition, Tian and Wang (2022) focused on the network buzzwords based on old words, summarized the main problems of the current new translation of old words, and discuss the translation strategy of such buzzwords. Tian (2020) analyzed the external motives such as social factors and communicative functions that generate Internet buzzwords from the perspective of eco-linguistics, explores the internal mechanisms such as the economic principle of language, and argues that we should treat Internet buzzwords rationally. Li and Huang (2022) used Goffman's Framework Analysis Theory to analyze the Internet buzzwords of 2018-2020 and explored the communication characteristics and social functions of Internet buzzwords.

At the same time, specific research on Internet buzzwords is also in progress. Many scholars have studied a specific network buzzword that was more popular at that time. For example, Zhu et al. (2022a) used the "Little Triangle" Theory to explore the three-dimensional dynamics of the Internet "X-ren" and found that "X" has the strongest word formation function when it is bisyllabic. From the perspective of cognitive metaphor, Zhu et al. (2022b) also explored the semantic generalization process and the metaphorical mechanism of semantic generalization of the network buzzword "lie flat". Based on the perspective of cognitive linguistics, Yang (2022) analyzed the representative words of "X-ren" structure and "X-jing" structure based on metaphor theory, so as to help people understand the connotation of words and master the usage of such words. Xi (2022) studies and analyzes the network buzzword "Shi Chui" from the three perspectives of metaphor, conceptual synthesis and category theory under the theory of cognitive linguistics, which should be helpful to understand the mechanism of word meaning and the cognitive law of people's understanding of things. Chen (2023) found that the existing research on the "XX Da" format is not deep enough, and the analysis of related causes needs to be further deepened. Therefore, he reanalyzed the "XX Da" format and tried to analyze the pragmatic motivation of this type of structure from the perspective of pragmatic memes.

2.3 Research on Language Variation and Internet Buzzwords

Language variation has received extensive attention from Chinese scholars. Scholars have studied the variation of Internet buzzwords and pointed out that metaphor and metonymy play an important role in the process of Internet language variation. Wu (2016) studied the variation of Internet language from the perspective of cognitive linguistics, pointing out that the variation

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of Internet language is the result of the interaction of various factors, such as people's cognitive style, psychology and social environment, and that metaphors and metonymy can contribute to the variation of Internet language. Lu and Chang (2022) took the annual "Top Ten Buzzwords" released by the editorial office of YAOWEN-JIAOZI from 2016 to 2020 as an example, and analyzed the buzzwords in the new media era from the perspective of language variation, exploring their basic forms of variation, motivation and social mentality that caused the variation. After the variation of buzzwords, people can easily understand, accept and apply them in their personal communication, mainly because the mechanism of metaphor and analogy is in line with human cognitive style.

Language variation is categorized in different ways from different perspectives. According to the scope of variation, language variation can be divided into four kinds: individual language variation, partial people imitation variation, partial group imitation variation and speech community variation (Ding, 2000). The popularity of language forms is a characteristic of Internet language. By creating, forwarding, commenting, imitating and recreating a certain language form, netizen end up with a language that attracts widespread attention on the Internet and is used in actual communication, that is, Internet buzzwords. The generation of Internet buzzwords is inextricably linked with language users, gradually transforming from an individual's to some people, some groups, and finally to that of the whole community. Therefore, this paper will start from the scope of language variation, analyze the recent widespread use of "be officially diagnosed as XX" by netizen, and sort out the linguistic motivation of its variation and the social mentality of netizen's willingness to imitate and use this phrase.

III. ANALYSIS OF LANGUAGE VARIATION OF “BE OFFICIALLY DIAGNOSED AS XX”

3.1 Origin of the buzzword

Recently, "Diagnostic Literature" has been widely used by netizen to emulate the format of a diagnostic letter, and then borrow the character traits of movie and TV characters to express their current state or emotions, or to tease others about their attitudes or opinions. "Diagnosis" is a term used in the medical field, when a person is diagnosed with a certain disease during a physical examination. The Internet buzzword "be officially diagnosed as XX" is an expression that is usually used in a playful, exaggerated or humorous context. Its core structure is "be officially diagnosed as XX", followed by a specific word XX, which represents a particular identity, trait or state. This expression is characterized by the announcement of "be officially diagnosed as XX" to express a "pathological" characteristic, but is not actually a medical diagnosis. On July 7, the topic of "Xi'an people are officially diagnosed as Shen Meizhuang" hit the Weibo trending. A Xi'an citizen explained: "There are tourists everywhere. I just want to hide at home." This state is like Shen Meizhuang in the *"Empresses in the Palace"* (a very popular TV series in China, audience like to use the content of the TV series to create). I am too lazy to go out and unwilling to see people. "Diagnostic Literature" has attracted netizen to continue to imitate, and people have begun to "self-diagnose" and release their emotions by labeling themselves. "Be officially diagnosed as XX" has spread rapidly on the Internet, and everything can be substituted. From the beginning of the popular film and television drama *"Empresses in the Palace"* to other memorable classic films, television dramas and animations, celebrities, food, animals, etc. For example, a netizen claimed that he was officially diagnosed as a potato because his belly are round and he likes "Tang Ping", being like potatoes.

3.2 Linguistic Motivation for Language Variation

One of the important reasons why people can easily understand, accept and apply the variant catchwords to personal communication is that the variant thinking of metaphor is in line with human cognitive style (Lu & Chang, 2022). The buzzword "be officially diagnosed as XX" reflects metaphorical thinking. Not all variations will be permanently spread, just as the hot words of the network in previous years have disappeared. The language community variation of a Internet buzzword needs to be widely imitated and disseminated to the extent that most people in a language community use it unconsciously. "XX" has not yet been used by the whole speech community. Therefore, this article will start from three aspects: individual language variation, partial people imitation variation, partial group imitation variation, and combine metaphors to sort out the context of the network language variation.

3.2.1 Individual Language Variation

Individual language variation refers to the variation in the language of an individual that does not conform to the standard form of language. Due to the relatively scattered distribution, most individual language variations do not cause others to respond

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(Ding, 2000). Based on the keywords of "be officially diagnosed" in Little Red Book (Xiaohongshu), Weibo and Douyin (TikTok), the main social software in China, it is found that the variation of the network language occurred on July 1, and most of them were diagnosed as the characters in the "Empresses in the Palace". At this time, "be officially diagnosed as XX" is still used by a small number of netizen who love "Empresses in the Palace".

A. "I am officially diagnosed as Huanbi"

"I am officially diagnosed as Huanbi" means that "I" has the same characteristics as Huanbi. Huanbi is the maid of the heroine in "Empresses in the Palace". She is also the female lead's half-sister, so she always holds high and step down, narrow-minded, dislike others, and like to use words to depreciate others." I just can't see her like that" is the most frequent sentence in the play. The netizen says that she's "officially diagnosed as Huanbi" does not mean that she is such a person as Huanbi, but conveys that there are some people she hates in the real and online world and that she is not in a good mood through the use of this buzzword.

B. "I am officially diagnosed as Su Peisheng" & "I am officially diagnosed as Consort Duan"

In addition to venting emotions, the buzzword can also convey the importance of one's own state of "mental exhaustion". Also being the characters in "Empresses in the Palace", Su Peisheng and Consort Duan have different meanings when they are the objects of "be officially diagnosed as". "I am officially diagnosed as Su Peisheng" is a cry for help under the fatigue of work, "groveling and being careful in front of the boss every day", which speaks of the state of mind of repressing oneself and swallowing one's anger. He served the emperor as much as he could, and sometimes he was reprimanded by the emperor for doing something bad. The netizen see Su Peisheng as if they see themselves in the workplace. They work hard every day and try their best to do their own work, but the boss still pricks sometimes, and feels that you are not doing well here, and there can be done better. What's more, the boss in front of you praise your good job, but in the back he says to your colleagues that your work is in a mess, infinitely demeaning you. Therefore, the buzzword "be officially diagnosed as Su Peisheng" vividly expresses the frustration of the workers, and also implies that they hope to be more considerate and caring in the workplace.

"Be officially diagnosed as Consort Duan" also conveys the mental state of many netizen who lose their vitality and exhaustion under the pressure of life. Consort Duan is one of the emperor's concubines in "Empresses in the Palace". Because poisoned by the emperor's favorite princess, so she was physically weak and mentally ill every day, but she was still living hard in order to avenge herself. The character image of Consort Duan is consistent with the life of many people in society. There are a lot of burdens on them. They may have elderly people in their families to support, or have children to go to school and interest classes, or both. They have also suffered a lot of grievances in the workplace. But they still have to live strong, for themselves and for their families. The buzzword "be officially diagnosed as XX" may not only vent bad emotions, but also appeal to people for care.

3.2.2 Partial people imitation variation

Partial people imitation variation refers to the fact that individual linguistic variation affects and is imitated by others, which leads to the emergence of partial person mimicry variation (Ding, 2000). The characters in "Empresses in the Palace" began to resonate with more netizen, and some of them began to imitate and recreate confirmatory literature, and so the objects that could be confirmed were extended to other deeply popular movies and TV dramas, cartoons, plants and animals, and so on.

A. "Be officially diagnosed as Lazy Sheep"

"Be officially diagnosed as Lazy Sheep" began to be widely used by netizen. Lazy Sheep is a sheep in the Chinese animated cartoon *Pleasant Goat and Big Big Wolf*, who likes to eat and sleep, doesn't like sports, and has no money. He always says he is a noble sheep born for sleeping. "Be officially diagnosed as Lazy Sheep" is used by a large number of netizen because the image of Lazy Sheep is very suitable for them, and the life of Lazy Sheep is the life they are living now, and even netizen who don't have this kind of leisurely life are still envious of this kind of life. Now this society is full of competition pressure, many people do not want to work hard just to have a lot of money to spend, the result may be at the expense of their physical health. In fact, there are a lot of such people who have money but their physical state is not good anymore, so they send their personal experience to the Internet to exhort everyone to work in moderation. It may be that the netizen have seen the deeds of these people, or they just want to live a dull life, so they like and yearn for Lazy Sheep's life. They even feel that their monthly salary is just enough to be able to support themselves, and it's a blessing to be able to eat and sleep on time. The buzzword "be officially diagnosed as

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Lazy Sheep" expresses netizen' derision of their own contentment with a dull life and lack of mental energy, but also their envy of the lazy goat's state of life.

B. "Be officially diagnosed as Jellyfish"

This is a more abstract way of expression, getting rid of the shackles of human identity and liberating nature in the name of animals. The "be officially diagnosed as jellyfish" is used to express that they have the same characteristics as jellyfish and are more vulnerable. Jellyfish contain 100% water, no brain nor heart, and will prick the object that hurts it when feeling hurt. In reality, many people are just like jellyfish, relatively simple, fragile, and not good at communicating with others. Such people are vulnerable, but because they have jellyfish-like characteristics, they will not fight back hard, but will shed tears on their own, alone to digest the harm caused by others. The netizen who say "they are officially diagnosed as jellyfish " uses obscure and rambling language to analyze its poor sociability and simple fragile personality, and also attracts other netizen to watch and decipher and hold together for warmth.

3.2.3 Partial Group Imitation Variation

Partial group imitation variation refers to the further linguistic variation that occurs on the basis of partial mimicry variation, i.e., the expansion of mimicry from a small number of people to a larger number of people, and the formation of a certain number of group mimicry (Ding, 2000). In early July, after the topic of "Xi'an people are officially diagnosed as Shen Meizhuang" hit the Weibo trending, many provinces began to follow the trend due to the weather, and topics such as "Beijing people are officially diagnosed as Nezha", "Fujian people are officially diagnosed as Sun Wukong", and "Cantonese are officially diagnosed as Yiping", also rushed to the Weibo trending. At this point, "be officially diagnosed as XX" has already been imitated and used by a certain number of groups.

A. "Beijing people are officially diagnosed as Nezha"

"Beijing people are officially diagnosed as Nezha" expresses the fact that due to the recent high temperatures in Beijing, people are traveling to work as if Nezha is on Wind Fire Wheels. Nezha, an important character in Chinese mythology and ancient Chinese literature such as *Fengshen Yanyi* (or *Investiture of the Gods*) travels not on foot but on wind and fire wheels. Beijing people feel like they are stepping on fire when they go out due to the high ground temperature, just like Nezha who travels on his Wind Fire Wheels.

B. "Fujian people are officially diagnosed as Sun Wukong"

Fujian netizen are self-diagnosed as Sun Wukong, also because of the high temperature, the locals feel as if Sun Wukong stay in the alchemy furnace. Sun Wukong is a character in the famous novel *Journey to the West*. He was once put into the alchemy furnace where the temperature is extremely high by Lord Laozi, which can reach thousands of degrees. The temperature in Fujian rose sharply, and staying in Fujian was like staying in a alchemy furnace, which was very hot.

C. "Cantonese are officially diagnosed as Yiping"

"Cantonese are officially diagnosed as Yiping" expresses the feeling of Guangdong netizen that Guangdong is affected by typhoon and often has torrential rains, which are as heavy as the rain on the day when Yiping, the female protagonist of the television drama *Deep Feeling in the Drizzle*, asked her father for money, so Guangdong netizen jokingly claim that they are diagnosed as Yiping.

IV. SOCIAL MENTALITY OF THE BUZZWORD USERS

As a popular language expression, Internet buzzwords can reflect or imply the social situation and social mentality of netizen (Wang , 2016). Social mentality is a macro social state of mind that pervades the whole society or social group over a period of time, and is expressed through the fads, fashions, public opinions of the whole society as well as the social life feelings, confidence in the future, social motives and social emotions of the members of the society (Yang, 2006). The creation and widespread dissemination of "be officially diagnosed as XX" reflects the social psychology of the general public from two sides. One is to seeking resonance and identity, and another is to relieve pressure in a self-deprecating way.

4.1 Seeking resonance and identity

The reason why Internet terms become popular is mainly due to the imitation, creation and use by Internet users. When netizen resonate with a certain Internet language, they will be willing to use and re-create it, which will lead to the rapid spread

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of the Internet language. The economic principle of language is reflected in the popular phrase "be officially diagnosed as XX", which uses movie and TV characters to accurately imply their mood and state of mind, which can only be understood but not conveyed in words, so that netizen with the same state of mind can clearly perceive the meaning behind it and take part in this culture, and have to put a label on themselves, bringing them closer to each other. The labeling of the Internet users has brought them closer to each other and aroused their emotional resonance. For example, netizen call themselves "She Kong", a label that reflects more of an identity and role-playing (Cai & Zhao, 2022).

4.2 Relieving pressure in a self-deprecating way

Internet buzzwords express netizen' general concerns and opinions about the current state of society as well as a way for netizen to vent their emotions (Wang, 2011). In today's rapidly developing economy and society, everyone has to face difficulties and pressure in life, study, work and interaction, and will have different degrees of emotions. Internet buzzwords fulfill netizen' psychological needs to release pressure and emotions. Therefore, through the use and imitation of Internet buzzwords, netizen give vent to their inner emotions and pressures that cannot be expressed to others directly in social life, and self-deprecation has become a common phenomenon in Internet buzzwords, such as the widespread use of "She Kong", "Fo Xi", "Ge You-esque lying" and other Internet buzzwords are widely used by netizen. Jiang (2021) points out that today's young generation, under the pressure of changing times, is more likely to use self-deprecating language to relieve and escape from the pressure of reality, presenting a self-examining spirit of entertainment. In the past, we did not like to mention one's illness and receive treatment, but now we self-diagnose and use exaggerated language to convey our heartfelt demands. "Be officially diagnosed with XX" uses simple and humorous language to allow people to label themselves to convey their moods and states, and to relieve the bitterness of facing high temperatures, pressures, and all kinds of unsatisfactory things in life. For example, a netizen jokingly said, "I am officially diagnosed as An Lingrong (A character in *Empresses in the Palace*) because I am really tired," expressing his/her sense of exhaustion.

V. CONCLUSION

In the Internet age, network buzzwords have become a real-time signal that can reflect people's emotional state and appeals in a certain period of time. This paper finds that netizen initially diagnosed themselves as familiar film and television characters to express their emotions. Subsequently, other netizen began to imitate and innovate, and diagnosed themselves as all kinds of things in the world, such as "potatoes" and "jellyfish". Finally, because of the weather conditions of the place of residence, netizen have posted that they have been officially diagnosed as "Nezha", "Yiping", etc., which has aroused the resonance and praise of netizen, making it a hot topic at Weibo. "Be officially diagnosed as XX " shows a strong inclusiveness. Every netizen can find their own "symptoms", so as to realize the needs of emotional resonance and identity. At the same time, this way also allows netizen to release the pressure and emotions in social life through self-mockery.

REFERENCES

- 1) Cai , J & Zhao, J.Y.(2022).As a metaphor of label and discipline - A Critical Discourse Analysis of the Internet Buzzword "She Kong". *Modern Communication(Journal of Communication University of China)*(09),138-145.
doi:10.19997/j.cnki.xdcb.2022.09.013.
- 2) Chai,L.(2005).Analysis of Language Deviation in Net Communication. *Shandong Foreign Language Teaching*(02),43-46.
doi:10.16482/j.sdwy37-1026.2005.02.015.
- 3) Chen,X.C.(2023).Research on Internet Buzzwords from the Perspective of Pragmatic MemesTaking “XX Da” as an Example. *Journal of Heilongjiang Institute of Teacher Development*(03),8-11.
- 4) Ding,C.H.(2000).Some Reasons, Variation Types on Language Variation. *Journal of Beijing Normal University(Social Sciences)*(06),117-121.
- 5) Guo,B.(2018).Translation Strategies of English Translation of Internet Buzzwords from the Perspective of Memetics. *Youth Years*(11),35.
- 6) Guo,F.L.(2006).Language Variation:Nature, Factors and Results. *Language Teaching and Linguistic Studies*(05),15-19.
- 7) Hu,Q.Q.(2019).Domestic Survey of Internet Hot Words Research in Recent Ten Years. *Journal of University of South*

Exploring Language Variation in Internet Buzzwords: A Case Study of the Phrase “Officially Diagnosed as XX”

- China(Social Science Edition)*(02),97-102. doi:10.13967/j.cnki.nhxb.2019.0032.
- 8) Jiang, J.G.(2021).Network Self-Mockery: Self-Deprecation, Defense Mechanisms and Value Ambiguity. *Study and Practice*(02),108-113. doi:10.19624/j.cnki.cn42-1005/c.2021.02.012.
 - 9) Li,B.W &Yang,S.H &Xiao,Z.(2020).Analysis of the Spread of Trafficking Anxiety Network Hot Words. *Youth Journalist*(24),28-30.
 - 10) Li,M.Q. & Huang,F.Z.(2022).Research on Internet Hot Words (2018-2020) from the Perspective of Semiotics--Communication and Social Function Construction. *Southeast Communication*(02),109-112. doi:10.13556/j.cnki.dncb.cn35-1274/j.2022.02.023.
 - 11) Liu,M.Z.(2023).Evolutionary Iteration, Speech Practice and Value Judgment of Internet Buzzwords—Taking 2022 Buzzwords for Example. *People's Tribune*(04),94-97.
 - 12) Li,X.C.(2022)A Study on the Characteristics and English Translation Strategies of Internet Buzzwords from the Perspective of Eco-translatology - - A Case Study of Internet Buzzwords in 2020. *Masterpieces Review*(08),83-85.
 - 13) Lu,G.L & Chang,M.T.(2022).The Exploration of New Media Catchwords from the Perspective of Language Variation —Taking the "Top Ten Buzzwords" of 2016-2020 in YAOWEN-JIAOZI as an Example. *Journalism Communication*(01),13-16.
 - 14) Shi,C.H.(1999).Language Regulation and Language Variation (I). *Language Planning*(04).doi:10.16412/j.cnki.1001-8476.1999.04.005.
 - 15) Tian,L. & Wang,W.F.(2022).On the Translation of Network Hot Words under the Principle of Recognition. *Journal of Jiaozuo Teachers College*(01),20-24.
 - 16) Wang,Q.J.(2011).Cultural Ecology and Social Psychological Analysis of Network Buzzwords. *Journal of Henan Normal University(Philosophy and Social Sciences Edition)*(04),43-45. doi:10.16366/j.cnki.1000-2359.2011.04.020.
 - 17) Wang,J.P.(2016).Between Carnival Feeling and Rigid Structure-the Social Situation and Social Mentality of Network Youth from the Perspective of Network Buzzwords. *China Youth Study*(04),83-89+47. doi:10.19633/j.cnki.11-2579/d.2016.04.013.
 - 18) Wu,K.H.(2016).A Cognitive Study of Internet Language Variation--The Case of "Gailou". *Language Planning*(33),29-30. doi:10.16412/j.cnki.1001-8476.2016.33.015.
 - 19) Xi, J.H.(2022).An Analysis of Network Hot Words “Shi Chui” from the Perspective of Cognitive Linguistics. *Journal of Elegance and Classic*(23),41-43.
 - 20) Yang,Y.F.(2022).A Study of Internet Person-referring Buzzwords from a Metaphorical Perspective--The Examples of "X-ren" and "X-jing". *Master and Masterpiece*(22),152-154.
 - 21) Yang.Y.Y.(2006).The Psychological Relationship between Individual and Macro-Society:the Definition of Social Mentality. *Sociological Studies*(04),117-131+244. doi:10.19934/j.cnki.shxyj.2006.04.006.
 - 22) You,R.J & Zou,J.Y.(2016).Sciolinguistics(3rd.edition). *Shanghai:Fudan University Press*,28.
 - 23) Zhang,G. & Jiang,W.(2011).A Study of Internet Catchphrases from Memetic Perspective. *Journal of Ocean University of China(Social Sciences)*(03),108-111.
 - 24) Zhu, Z.Y., Li, D.S. & Li, J.H.(2022a).An Analysis of the Construction of Network Hot Word “X-ren”under theTheory of "Little Triangle". *Journal of Lianyungang Normal College*(02),41-45. doi:10.15927/j.cnki.lygszxb.2022.02.022.
 - 25) Zhu, Z.Y., Li, D.S. & Li, J.H.(2022b).A Semantic Generalization Analysis of the Internet Buzzword "Tang Ping” from the Perspective of Cognitive Metaphors. *Journal of Hubei University of Science and Technology*(05),74-78. doi:10.16751/j.cnki.hbkj.2022.05.019.



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The Effectiveness of Regulations on Waste Reduction Road Map by Manufacturers



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ABSTRACT: A good and healthy environment in a sustainable manner is part of human rights that need to be fought for, especially regarding plastic waste. Today, plastic waste has polluted land and water areas, due to limited management and the slow handling of waste management so that it affects climate change due to carbon gas emissions produced. Based on this awareness, the Government issued the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning Roadmaps for Reducing Waste by Manufacturer. In fact, there are still very few Manufacturers who voluntarily create and implement a waste reduction roadmap. Therefore, this study examines the effectiveness of Minister of Environment and Forestry Regulation Number 75 of 2019 concerning Roadmaps for Reducing Waste by Manufacturer from the normative aspect (with a statute approach) and sociological (with a qualitative approach). This research used secondary data that obtained through literature study, and primary data obtained through observation. All the data analysed qualitatively with content analysis. The results of the study show that Regulation of Minister of Environment and Forestry Number 75 of 2019 concerning Roadmaps for Reducing Waste by Manufacturer has stipulated an obligation to manufacturers to create a roadmap for waste reduction. Problems occur in implementation due to lack of manufacturer participation which is influenced by 2 (two) factors, namely (1) economic factors because the transition to environmentally friendly materials will affect production costs; and (2) regulatory factors due to lack of socialization, lack of transparency in supervision, and the absence of sanctions for manufacturers who are negligent or intentionally not making and implementing a waste reduction roadmap.

KEYWORDS: Effectiveness of Regulation, Minister of Environment and Forestry Regulation, Producent and Manufacturer, Waste Reduction Roadmap, Human Rights Protection

I. INTRODUCTION

The right to obtain a good and healthy living environment is one of the basic rights guaranteed to be protected in Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which states that "Everyone has the right to live in physical and spiritual prosperity, to have a place to live, and to have a safe environment. good and healthy and have the right to obtain health services. Thus, the use of the environment must pay attention to several things, including: [1]

- a) Future generations must still inherit an environment that still has a source of prosperity to give them life;
- b) There is a dynamic balance between elements found in nature;
- c) There is a guarantee for nature conservation; and
- d) Planning that still pays attention to the environment.

In line with this principle, the United Nations Conference on Environment and Development in Rio de Janeiro (Rio de Janeiro Conference) in 1992, agreed on 5 (five) n principles of environmental protection and development, that is:

- a. The principle of intergenerational justice, which implies that every generation has the right to accept environmental conditions that are not in a bad condition as a result of the actions of the previous generation.
- b. The principle of justice in one generation, namely the principle that places the burden of environmental problems must be shared by the community in one generation. According to Ben Boer, this principle refers that people in one generation have the right to use natural resources and enjoy a clean and healthy environment [2].
- c. The principle of early prevention, namely the principle that the threat of irreversible environmental damage and the absence of conclusive and definitive scientific findings or evidence, cannot be used as an excuse to prevent environmental damage [3].

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- d. The principle of protecting biodiversity, namely the principle to prove commitment and awareness to prevent premature extinction of biodiversity as a characteristic of sustainable development.
- e. The principle of internalizing environmental costs, environmental damage can be seen as an external cost of an economic activity suffered by parties who are not involved in the economic activity. So the cost of environmental damage must be integrated into the decision-making process related to the use of these natural resources [4].

The issue of sustainable environmental development is one of the important phenomena to be observed recently. The continuity of physical development must be balanced with environmentally sound development as entities that are mutually dependent to support quality community life. One of the thorny issues that is a latent problem for environmental sustainability is related to the production of waste, especially for the type of plastic waste. Based on data compiled from the Ministry of Environment and Forestry's National Waste Management Information System website (SIPSN Kemen LHK) in 2021 there will be 28.7 million tons of landfill, with details of 18.5 million tons (64.3%) of managed waste, and 10.2 million tons (35.7%) of unmanaged waste [5]. In composition based on the type of waste, the largest piles of waste are food waste (41%), plastic (17.3%), wood, twigs, and leaves (13.1%), paper or cardboard (11.7%), and other waste such as glass, cloth, metal, rubber. Meanwhile, the largest sources of waste came from household waste (40.9%), commercial centers (18.3%), traditional markets (17.1%), offices (8.2%), public facilities (6, 4%), and others [6]. The amount of plastic waste production occupies the second highest position after food waste. What exacerbates the problem of plastic waste is also related to the way plastic waste is managed, namely 48% is managed by burning, 13% is disposed of on abandoned land, and 9% is dumped into the sea.

The phenomenon of pollution and the accumulation of plastic waste that is not managed properly will eventually lead to several new problems, including: [7]

- a. Garbage can be a source of disease, the environment becomes dirty;
- b. Garbage burning can result in air pollution that interferes with public health and triggers global warming;
- c. Decomposition of garbage can cause unpleasant odors and is harmful to health. The liquid released by the garbage can seep into the ground and cause contamination of wells, ground water and if it is discharged into river bodies it can pollute the river; and
- d. Disposal of garbage into rivers or water bodies can cause silting of the river so that it triggers flooding.

Some of these feared problems have recently become a reality where according to data from the Ministry of Environment and Forestry, in 2020 the ocean area was polluted by 1,772.7 grams of waste per square meter (g/m²), of which the composition of plastic waste pollutes the area. the ocean by 627.8 g/m² or equivalent to 35.4% of the total weight of waste in the sea [8]. In addition to triggering environmental pollution, plastic waste also produces carbon emissions where in 2040 it is estimated that the amount of plastic waste produced by the Indonesian population will reach 6.8 million tons with 48% of plastic waste burned will produce carbon emissions reaching 7% of waste in Indonesia. In 2018 alone, from 37.91 million tons of organic waste produced 18.95 million tons of greenhouse gases equivalent to carbon dioxide, it is predicted that in 2050 waste production will reach 3.4 billion tons with 1.3 billion tons of plastic waste in 2040 [9].

According to a World Economic Forum report, plastic pollution in Indonesia will increase to 6.1 million tons by 2025 with the amount leaking into the oceans reaching 780 thousand tons. Meanwhile, carbon gas emissions due to plastic waste are expected to increase in 2050 with a projection in 2019 of 0.86 gigatons of CO₂e (equivalent to 189 coal-fired power plants of 500 megawatts), in 2030 of 1.34 gigatonnes of CO₂e (equivalent to 295 coal-fired power plants), and in 2030 2050 by 62 gigatons of CO₂e (equivalent to 615 coal-fired power plants). The high carbon emission cannot be separated from the way plastic waste is managed, where 48% is managed by burning, 13% is disposed of on abandoned land, and 9% is dumped into the sea [10].

This condition puts Indonesia in a "waste emergency" because there is no holistic handling to reduce plastic waste production from upstream to downstream. Whereas Indonesia has a nationally determined contribution target burden (NDC) in terms of reducing greenhouse gas emissions by 29% with its own efforts, and 41% with adequate international assistance, while the target for reducing greenhouse gas emissions from the waste sector plastic by 0.38-1% in 2030 or equivalent to 296 tons of CO₂e [11]. Various commitments to reduce the production and processing of plastic waste have been carried out by the government, both central and local governments, one of which is by promoting the 3R (Reuse, Reduce, recycle) movement, prohibiting the use of single-use plastic bags, Waste Banks, and including by issuing a Minister of Environment Regulation. Life and Forestry Number 75 of 2019 concerning Roadmap for Reducing Waste by Manufacturers in an effort to reduce plastic waste.

However, efforts to reduce the use of plastic waste are not enough just at the level of legislation. When referring to the concept of Lawrence M. Friedman's legal system, then the law (statutory regulations) functions when the substance, structure, and culture of society work simultaneously. In addition, to direct the community to reduce the use of plastic waste requires an integrated approach as stated by Mochtar Kusumaatmadja that an integrated or comprehensive approach system must be applied by law to be able to regulate the human environment properly and well [12]. However, in reality the disobedience and lack of human

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awareness to preserve the environment (especially reducing the production of plastic waste) which poses various threats to environmental sustainability, has been influenced by various factors including: convenience and flexibility, economic value, technology, development that is not environmentally friendly, industrialization, and human egoism who considers himself to be the center of the universe (anthropocentrism) which is very complex.

II. RESEARCH PROBLEM

Based on the background, the legal issue in this research is "How is the effectiveness of the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning Roadmaps for Reducing Waste by Manufacturers in an effort to reduce plastic waste in Indonesia?"

III. HYPOTHESIS

As an introduction to this research, the following hypothesis is set:

"If producers create a roadmap and implement it consistently to reduce the use of plastic materials and innovate and switch to environmentally friendly materials, then the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning Roadmaps for Waste Reduction by Manufacturers has effective force."

IV. THEORETICAL BASIS

A. Environmental Management and Protection

Protection of the environment for human needs can be seen in the objective of the establishment of the Republic of Indonesia as stated in Paragraph IV of the Preamble to the 1945 Constitution of the Republic of Indonesia (UUD NRI 1945) which states that "... the Indonesian state which protects the entire Indonesian nation and all spilled the blood of Indonesia, and to promote the general welfare, ...". The provisions contained in Paragraph IV of the Preamble to the 1945 Constitution of the Republic of Indonesia affirm the obligations and duties of the state to protect the entire Indonesian nation in the Indonesian environment for the happiness of all Indonesian people [13].¹ The environment provides and produces various things needed by humans, both for clothing, food and shelter needs. With the dependence of humans on the environment, it is necessary for human awareness to maintain, care for, and ensure the continuity and sustainability of the environment.

According to I Made Arya Utama, there are 3 (three) basic things from the two formulations of the article, namely: (1) there are 7 (seven) activities in environmental management in the form of structuring, utilization, development, maintenance, supervision, and control activities; (2) environmental management is based on the principle of preserving environmental functions; and (3) environmental management is carried out through an integrated approach with the existence of spatial planning and protection of environmental elements [14].² The right to a good and healthy environment can be divided into 4 (four) rights, namely: [15]³

- a) The right to life, this right can be disturbed due to damage or contamination of the environment which results in disruption of human health;
- b) The right to a decent life;
- c) The right to health which includes physical and mental health; and
- d) The right to be free from any intervention on property, namely the right to be free from environmental disturbances such as pollution, flooding, and climate change.

According to positive law in force in Indonesia, environmental problems are divided into 2 (two), namely:

- a. Environmental destruction is the act of a person causing direct or indirect changes to the physical, chemical, and/or biological characteristics of the environment so that it exceeds the standard criteria for environmental damage.
- b. Environmental pollution is the entry or inclusion of living things, substances, energy, and/or other components into the environment by human activities so that they exceed the established environmental quality standards.

B. Legal System Theory

In carrying out its function to achieve a goal to be achieved effectively, the law must be seen as the substance of a large system, namely society or its environment. Sudikno Mertokusumo likened the legal system to a mosaic image, that is, an image that is cut into small parts and then reconnected, so that it looks as whole as the original image. Each part does not stand alone apart from the others, but the hooks hook with the other parts. Each part has no meaning outside the unity. There is no need for conflict or

¹ Kusnadi Hardjasoemantri, *Hukum Tata Lingkungan*, (Yogyakarta: Gajah Mada University Press, 2002), p.66.

² Mukhlis dan M. Lutfi, *Hukum Administrasi Lingkungan Kontemporer*, (Malang: Setara Press, 2010), p.29.

³ Sodikin, "Gagasan Kedaulatan Lingkungan dalam Konstitusi dan Implementasinya dalam Pelestarian Lingkungan Hidup", *Jurnal Masalah-Masalah Hukum*, 48 (3), 2019, p. 301.

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contradiction in this unity. If there is a conflict, it will be immediately resolved by and within the system itself [16].⁴ Mariam Darus Badruzaman said the same thing about the legal system. According to him, the legal system is "a unified set of principles, which is the foundation, upon which the rule of law is built" [17].⁵

According to Lawrence M. Friedman, the legal system can be interpreted as a legal entity consisting of various components, which include legal substance, legal structure, and legal culture. The three components of the legal system are interrelated with each other. By likening the legal structure to a machine. Substance is what the machine produces or does. The legal culture of society is anything or anyone who decides to turn on or turn off the machine and decides how the machine is used. Legal awareness is a determining factor for the effectiveness or ineffectiveness of a law because legal awareness concerns the factor of whether a legal provision is known, understood, appreciated, and obeyed by the community as users of the law. Awareness is born from the knowledge and understanding of the community towards the law. Therefore, providing information through legal counseling is not only aimed at making the public aware of legal regulations but also trying to make people obey and obey the law on the basis of the assumption that the law is in accordance with the values that exist in their social group.

C. Effectivity of Law

The validity of the law consists in the fact that society adjusts its actions according to the norm so that it shows the quality of a norm, while the effectiveness of the law shows the actual human action that is in accordance with the rule of law so as to show the quality of actual human action. According to Soerjono Soekanto, in the context of the sociology of law, the problem of legal compliance or obedience to legal rules in general has become the main factor in measuring the effectiveness of something stipulated in this law [18].⁶

In addition, Soerjono Soekanto said that the effectiveness of the law is influenced by 5 (five) factors, namely: [19]⁷

- a) Legal Factors that the law as a means to realize justice and legal certainty sometimes contains conflicts in its implementation.
- b) Law Enforcement Factors that to ensure that the law can function is strongly influenced by the mentality and quality of law enforcement officers.
- c) Factors of law enforcement facilities or facilities that law enforcement officers in carrying out their duties and functions optimally need to be equipped with optimal and professional vehicles and tools.
- d) Community factors that the degree of community compliance with the law is an indicator of the effectiveness of the law.
- e) Cultural factors, that cultural values are the basis for the formation of laws and determine what is considered good so that it is followed and what is considered bad so that it is avoided.

Legal awareness is a determining factor for the effectiveness or ineffectiveness of a law because legal awareness concerns the factor of whether a legal provision is known, understood, appreciated, and obeyed by the community as users of the law. Therefore, providing information through legal counseling is not only intended to make the community aware of legal regulations but also to make people obey and obey the law on the basis of the assumption that the law is in accordance with the values that exist in their social group.

V. RESEARCH METHOD

This research will use a normative-empirical legal research method that is prescriptive so that it can produce arguments, theories, and concepts as prescriptions for assessing phenomena that occur by providing solutions in solving legal problems. This study examines the effectiveness of the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning Roadmaps for Reducing Waste by Producers based on 2 (two) approaches, namely: (1) normative-juridical research using a statute approach; and (2) empirical research using a qualitative approach. This research was conducted by using library research on written legal literature, as well as by observing and recording social and legal situations, conditions, and events that occur and develop in society, especially those that occur in several retail stores, coffee shops, mini market, supermarket, traditional market, and so on [20]. The data obtained from the results of this study are: (1) primary data as a result of observations on the implementation of plastic waste reduction and control policies by producers; and (2) secondary data in the form of primary, secondary, tertiary, and primary, secondary, and tertiary legal materials outside the field of law [21]. The data and legal materials will be compiled by selecting and sorting based on validity and reliability that can be scientifically justified to be analyzed qualitatively in a sequential, logical and effective manner so as to facilitate interpretation and understanding of the analysis results [22].

⁴ Sudikno Mertokusumo, *Mengenal Hukum (Suatu Pendahuluan)*, (Yogyakarta: Liberty, 2004), p.102-103.

⁵ Mariam Darus Badruzaman, *Mencari Sistem Hukum Benda Nasional*, (Bandung: Alumni, 1983), p.15.

⁶ Soerjono Soekanto, *Sosiologi: Suatu Pengantar*, (Jakarta: Rajawali Pers, 1996), p.20.

⁷ Soerjono Soekanto, *Faktor-faktor yang Mempengaruhi Penegakan Hukum*, (Jakarta: Raja Grafindo Persada, 2007), p.5.

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VI. RESULT AND DISCUSSION

As a legal state that puts forward the principle of legality which requires that every activity in the life of the state and its citizens be regulated through written legal instruments (laws and regulations), in relation to reducing plastic waste production, it has been regulated normatively in several laws and regulations that emphasize the importance of controlling and reducing waste. plastic for sustainability and environmental preservation through:

- a. Law Number 32 of 2009 concerning Environmental Protection and Management.
- b. Law Number 18 of 2008 concerning Waste Management.
- c. Law Number 36 Year 2009 concerning Health.
- d. Government Regulation Number 81 of 2012 concerning the Management of Household Waste and Waste Similar to Household Waste.
- e. Minister of Environment Regulation Number 13 of 2012 concerning Guidelines for the Implementation of Reduce, Reuse, and Recycle through Waste Banks.

In this case the law (statutory regulations) was formed to achieve legal objectives, which by Law Number 18 of 2008 concerning Waste Management (UU Waste Management) it is stated that waste management so far has not been in accordance with the techniques and methods of sound waste management. Environment, resulting in negative impacts on public health and the environment. Therefore, an integrated and comprehensive waste management is needed from upstream to downstream in order to provide economic benefits, be safe for the environment, and can change people's behavior. The presence of this law is needed to provide legal certainty, clarity of responsibilities and authorities of the government as well as the role of the community and the business world in proportional, effective and efficient waste management.

The obligation for waste management is not only borne by the government, but also to the community, especially producers as regulated in Articles 12, 13, and 14 of Government Regulation Number 81 of 2012 concerning Management of Household Waste and Types of Household Waste, which includes the obligation to:

1. Limiting waste generation by drawing up plans and/or programs to limit waste generation as part of its business and/or activities and/or producing products using packaging that is easily decomposed by natural processes and which generates as little waste as possible.
2. To recycle waste by: a. formulates a waste recycling program as part of its business and/or activity; b. using production raw materials that can be recycled; and/or c. Retrieve waste from product and product packaging for recycling.
3. Reuse waste by: (a). formulate a plan and/or program for the reuse of waste as part of its business and/or activity in accordance with waste management policies and strategies; (b). using production raw materials that can be reused; and/or (c). Retrieve waste from product and product packaging for reuse.

The use of raw materials and packaging that can be decomposed by natural processes, which can be recycled, and produce as little waste as possible is carried out in ten-year stages through a road map. The provisions regarding the roadmap were further followed up with the enactment of the Minister of Environment and Forestry Regulation Number 75 of 2019 concerning Roadmaps for Reducing Waste by Manufacturers (**Minister Regulation No. 75/2019**).

Article 3 of Minister Regulation No. 75/2019, states that the provisions for making a waste reduction roadmap apply to 3 (three) main manufacturer sectors, namely:

- a. Manufacturing manufacturers, which include the food and beverage industry, consumer goods industry, and the cosmetics and body care industry.
- b. Manufacturers of food and beverage services, which include restaurants, cafes, restaurants, catering services, and hotels.
- c. Retail manufacturers, which include shopping centers, modern stores, and people's markets.

Waste reduction is carried out on products, product packaging, and/or containers made of plastic, aluminum cans, glass, and paper which are difficult to decompose by natural processes, cannot be recycled, and/or cannot be reused.

In implementing the Waste Reduction Roadmap, Article 6 of Minister Regulation No. 75/2019, stipulates waste reduction procedures which include:

- a. Limitation of waste generation by: (1) using products, product packaging, and/or containers that are easily decomposed by natural processes and which generate as little waste as possible; and/or (2) do not use products, product packaging, and/or containers that are difficult to decompose by natural processes.
- b. Recycling of waste by: (1) using production raw materials that can be recycled; and/or (2) using recycled production raw materials.
- c. Reuse of waste by using raw materials that can be reused.

In this case, the existence of Minister Regulation No. 75/2019 is part of an integral effort taken to implement and achieve the functions and goals aspired to by law and the constitution in the context of realizing sustainable environmental protection. In legal

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science, the most common is stated regarding the purpose of Gustav Radbruch's law, which consists of 3 (three) values, namely: [23]

1. Justice: The purpose of law is to create justice in the sense that the same things must also be treated equally.
 2. Legal certainty, that the law aims to protect the interests of individuals and the community so that they know what actions are allowed and vice versa which actions are prohibited so that they are protected from arbitrary actions by the government.
 3. Benefit, that the law aims to produce pleasure, happiness, or benefit for as many people as possible.
- Meanwhile, Esmi Warassih also put forward 3 (three) theories related to legal objectives, as follows: [24]
- a. Ethical theory, which states that the purpose of the law is solely to achieve justice, the content of the law is determined by ethical beliefs or judgments about a treatment and action.
 - b. Utility Theory, which states that the purpose of law is to ensure the greatest happiness for the greatest number of people. This is similar to the utility theory proposed by Jeremy Bentham.
 - c. Mixed theory, which states that the main purpose of law is order, and therefore order is a condition for the existence of an orderly society.

By linking these objectives, a relationship can be obtained that when viewed based on its formation, Minister Regulation No. 75/2019 is intended to provide a sense of justice for the community to obtain a good and healthy living environment as well as equal treatment of all producers who produce plastic waste to make maps. Way of reducing waste (the theory of justice), providing legal certainty in the implementation plan of waste reduction efforts, and providing benefits not only for the environment, but also for humans for present and future generations to enjoy and utilize the environment and the resources contained therein.

To achieve this goal, the law, in this case Minister Regulation No. 75/2019, has certain objectives to be achieved for the community or legal subjects it addresses. Law as a tool to achieve goals in society also has various functions because it is influenced by various factors and community conditions. The rule of law that is formed from values and norms that live and develop in society, has a dual task and function, namely on the one hand it functions to maintain existing and developing values in society, and on the other hand it functions to form a new culture and develop human rights [25]. Abdul Manan suggested 4 (four) legal functions, namely: [26]

- a. The law functions as a standard of conduct which is a measure of behavior that must be obeyed by everyone in relation to others.
- b. Law functions as a tool of social engineering, becoming a tool or means to change society for the better.
- c. The law functions as a tool of social control that controls human behavior so as not to act against the norms of law, religion, and decency.
- d. Law functions as a facility of human interaction, which not only creates order but also facilitates the process of social interaction and is expected to cause changes in people's lives.

Minister Regulation No. 75/2019 has a function in providing behavioral guidelines (Standard of Conduct) as well as changing the community to raise awareness in reducing plastic waste production (a tool of social engineering). This can be seen based on the records of the Ministry of Environment and Forestry, that as of May 2022 there have been 33 producers who have submitted roadmap documents for waste reduction and the majority are dominated by large companies in the manufacturing industry, such as PT. Tirta Investama (Danone Aqua), PT. Protect & Gamble Home Products Indonesia, and PT. Unilever, while the retail industry that has sent its waste reduction roadmap is PT. Matahari Department Store and PT. Super Indo Lion [27]. This shows that Minister Regulation No. 75/2019 has binding power (validity) that can compel it to be obeyed by all stakeholders regulated in it.

However, according to the Zero Waste Indonesia Alliance, the number of producers making this roadmap is very far from the goal of reducing waste generation, because it refers to data from the Ministry of Industry that the number of large and medium-sized manufacturing companies in Indonesia until 2021 will reach 29.000 (twenty-nine thousand). Meanwhile, according to the Ministry of Industry, in 2019, Indonesia needs 7.2 million tons of pure plastic raw materials. If it is observed in the community, even though a roadmap for reducing waste has been made by the producer, this change does not necessarily shift to fully environmentally friendly packaging, for example, based on a report by the Center for Indonesia's Strategic Development Initiative, that the consumption rate of bottled drinking water is increased by about 15% in the last 20 years, the Director of Ecological Observatin and Wetlands Conservation (Ecoton) Report states that the amount of plastic packaging that can be recycled by the recycling industry is still around 14-15% [28]. In addition, the use of single-use plastics, especially in traditional markets, wrapping straws, beverage containers, and packaging for medicines, supplements, and vitamins, snacks and drink sachets, and so on. This shows that the reduction of waste, especially by producers, is still far from the expectation of achieving a 30% reduction in waste by 2029 as expected.

Fajri Fadhillah from the Indonesian Center for Environmental Law (ICEL) stated that the regulations regarding the Road Map established by the Ministry of Environment and Forestry still have many gaps and shortcomings, including: [29]

- a. This rule is only voluntary (voluntary) and not mandatory (obligation) to seriously design a waste reduction roadmap;

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- b. No sanctions are applied if the producer does not comply with or comply with these rules; and
- c. There is no clear limit or target regarding the amount of plastic packaging production that producers must reduce due to the lack of transparency.

Meanwhile, the Ministry of Industry also confirmed that no single manufacturer in Indonesia has committed to stop the use of sachet packaging to reduce plastic waste due to considerations of production costs and policies that do not regulate the prohibition of using single-use plastic packaging.

The low participation of manufacturers in complying with Minister Regulation No. 75/2019 shows that the existence of the law has not been effective enough to induce compliance by manufacturers. This shows that there has been a disparity between legal reality and legal ideals, specifically seen the level between law in action (law in action) and law in theory (law in theory) or in other words this activity will show the relationship between law in the book and law in action [30]. This disparity will greatly affect the effectiveness and compliance with the law, where according to Zainuddin Ali there are 4 (four) factors that greatly affect the effectiveness of the law, which include: (1) the rule of law/regulation itself; (2) officers/law enforcement officers; (3) the means or facilities used by law enforcers; and (4) public awareness [31]. Meanwhile Bustanul Arifin as quoted by Raida L Tobing et al provides simpler criteria for the effectiveness of a legal system by stating that in a country based on law, a law is effective if it is supported by three pillars, namely:

- a. Authoritative agencies or law enforcement can be relied on.
- b. Systematic clear legal regulations.
- c. High public legal awareness [32].

The degree of legal effectiveness, according to Soerjono Soekanto, is determined by the level of community compliance with the law, including law enforcers, so that the assumption is known that "a legal behavior is considered effective if the behavior leads to the goal desired by the law (obeying the law)". The functioning of the law is a sign that the law is achieving its legal goals, namely trying to achieve peace, order and tranquility [33].

With the low participation of producers in making, planning, and implementing a roadmap for waste reduction in the last 2 (two) years since the enactment of Minister Regulation No. 75/2019, the law is only enforced in a pseudo-formality. In the perspective of J.J. Bruggink as quoted by B. Arief Sidharta, the validity (validity) of a regulation or legal instrument can be divided into 3 (three) kinds, namely: [34]

- a. factual or empirical validity, namely the actual behavior of the community including law enforcement officers to comply with, enforce, and apply a law or not.
- b. Normative or formal enforcement, namely the validity of the law based on the existence of regulations in the rule system or hierarchy of laws and regulations.
- c. Applicability is evaluative, namely the validity of the law in terms of its content, is considered correct, valuable, or important to the social behavior of the community.

Meanwhile, in the context of the formation of law, there are 3 conditions for the validity of the law as a rule, namely: [35]

- a. The rule of law applies philosophically, namely in accordance with the ideals of law as the highest positive value.
- b. Legal rules apply juridically, if their determination is based on a higher-level rule or is formed on a predetermined basis.
- c. The rule of law applies sociologically, if the rule is effective. That is, the rules in question can be enforced by the authorities even though they are not accepted by the community (the theory of power) or the rules apply because of recognition from the community.

These three conditions must be met in order for the law to function, because: (1) if the rule only applies juridically, there is a possibility that the rule is a dead rule; (2) if it only applies sociologically in terms of the theory of power, then the rule becomes a coercive rule; (3) if it only applies philosophically then it is possible that the rule is only a law that is aspired to (*ius constituendum*). Thus, in the formation of legislation, it must pay attention to and must not conflict with the socio-cultural values that live in society. Law is a reflection of society, so it is not easy to force people to implement every rule in a way that is not rooted in the values and habits of society. There is always a tug-of-war relationship between applicable and enforced laws and the people. A law will be effective only if there is public awareness of the legislation. One of the things that must be done so that the community can actively participate in waste management, and realize environmental sustainability, the public must be awakened by their awareness that they also have a responsibility to carry out waste management to preserve the surrounding environment. Legal awareness will lead to legal compliance, and for the emergence of legal awareness, knowledge of the law is needed, which in this case is statutory regulations. Thus, it is possible for lawmakers to understand that the law does not only make legal instruments and enforce their implementation, but also requires participation and compliance for those who are related to the established norms.

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V. CONCLUSIONS

The government's efforts to reduce plastic waste production through the Minister of Environment and Forestry Regulation No. 75 of 2019 concerning Waste Reduction Roadmaps by Manufacturers have yet to show compliance from producers to provide and implement a waste reduction roadmap. This is known based on a phenomenon in society in the form of very few producers who follow and comply with Minister Regulation No. 75/2019. The low participation is based on the difficulty in making the transition from plastic raw materials to environmentally friendly raw materials, both from the aspect of economic value, as well as from the aspect of flexibility, difficulties in innovating and being creative to find product substitutes. Meanwhile, from the regulatory aspect, the regulation regarding waste reduction through the manufacture of road maps by producers has become a pseudo-norm that has no effective value because it is not balanced with sociological applicability and lack of awareness and compliance with the address of the norm. This factor is actually also caused by the lack of ability to bind and force producers to obey it because of the absence of firm and clear sanctions if the norm is violated, causing the norm to be powerless in its application in society. Thus, Minister Regulation No. 75/2019 still cannot be said to be effective because it does not contain firm and clear juridical and sociological values.

To reduce the amount of plastic waste production by producers, there are several things that can be done, including changing the provisions in Minister Regulation No. 75/2019 which imposes obligations on producers and implementing a mechanism in the form of negative sanctions (administrative sanctions) for producers who do not comply with these regulations. In addition, it is necessary to provide confirmation in the form of a percentage or amount of plastic waste production that must be reduced and carry out socialization and supervision of producers on a regular basis to encourage the acceleration of reducing plastic waste production to carry out the transformation of environmentally friendly materials through the development of innovation and use of technology by manufacturers. Meanwhile, the Government needs to improve technology-based waste management facilities to reduce the increase in carbon emissions and environmental pollution on land and at sea.

ACKNOWLEDGMENT

The researcher team would like to thank the parties and especially the Institute for Research and Community Service of Tarumanagara University (LPPM Untar) for accommodating and assisting the implementation and funding of this research.

REFERENCES

- 1) Rosana, M. (2018). Kebijakan Pembangunan Berkelanjutan yang Berwawasan Lingkungan Hidup di Indonesia. *Jurnal Kelola: Jurnal Ilmu Sosial*, 1 (1): 148-163. Doi: <http://doi.org/10.15575/jk.v1i1.4128>.
- 2) Siahaan, N.H.T. (2004). *Hukum Lingkungan dan Ekologi Pembangunan*. Jakarta: Erlangga.
- 3) Bethan, S. (2008). *Penerapan Prinsip-Prinsip Hukum Pelestarian Fungsi Lingkungan Hidup dan Kehidupan Antar Generasi*. Bandung: Alumni.
- 4) Siombo, M.R. (2012). *Hukum Lingkungan dan Pelaksanaan Pembangunan Berkelanjutan di Indonesia*. Jakarta: PT. Gramedia Pustaka Utama.
- 5) Dhini, V. A. (2022, May 18). Berapa Banyak Sampah di Laut Indonesia?. *Databoks*. Retrieved on 14th August 2022. <https://databoks.katadata.co.id/datapublish/2022/05/18/ada-berapa-banyak-sampah-di-laut-indonesia>.
- 6) Kementerian Lingkungan Hidup dan Kehutanan. "Capaian Kinerja Pengelolaan Sampah". Retrieved on 14th August 2022. <https://sipsn.menlhk.go.id/sipsn/>.
- 7) Suwerda, B. (2012). *Bank Sampah: Kajian Teori dan Penerapannya*. Yogyakarta: Pustaka Rihama.
- 8) Dhini, V. A. (2022, May 18). Berapa Banyak Sampah di Laut Indonesia?. *Databoks*. Retrieved on 14th August 2022. <https://databoks.katadata.co.id/datapublish/2022/05/18/ada-berapa-banyak-sampah-di-laut-indonesia>.
- 9) Hermawan, Erwan. (2022, February 27). Sampah: Angka. *Tempo* (Newspaper).
- 10) Pramita, D. (2022, February 8-14). Menanti Pengurangan Sampah Plastik dari Hulu. *Tempo* (Newspaper).
- 11) Pramita, D. (2022, February 8-14). Menanti Pengurangan Sampah Plastik dari Hulu. *Tempo* (Newspaper).
- 12) Rochmani. (2018). *Hukum Lingkungan dan Penegakan Hukum*. Semarang: Penerbit Pustaka Magister.
- 13) Hardjosoemantri, K. (2002). *Hukum Tata Lingkungan*. Yogyakarta: Gajah Mada University Press.
- 14) Mukhlis & Lutfi, M. (2010). *Hukum Administrasi Lingkungan Kontemporer*. Malang: Setara Press.
- 15) Sodikin. (2019). Gagasan Kedaulatan Lingkungan dalam Konstitusi dan Implementasinya dalam Pelestarian Lingkungan Hidup. *Jurnal Masalah-Masalah Hukum*, 48 (3): 294-305. Doi: <https://doi.org/10.14710/mmh.48.3.2019.294-305>.
- 16) Mertokusumo, S. (2004). *Mengenal Hukum (Suatu Pendahuluan)*. Yogyakarta: Liberty.
- 17) Badruzaman, M. D. (1983). *Mencari Sistem Hukum Benda Nasional*. Bandung: Alumni.
- 18) Soekanto, S. (1996). *Sosiologi: Suatu Pengantar*. Jakarta: Rajawali Pers.

The Effectiveness of Regulations on Waste Reduction Road Map by Manufacturers

- 19) Soekanto, S. (2007). *Faktor-faktor yang Mempengaruhi Penegakan Hukum*. Jakarta: Raja Grafindo Persada.
- 20) Marzuki, P. M. (2019). *Penelitian Hukum (Edisi Revisi)*. 14th Printed. Jakarta: Prenada Media Group.
- 21) Sugiyono. (2012). *Memahami Penelitian Kualitatif*. Bandung: Alfabeta.
- 22) Ishaq, H. (2018). *Dasar-Dasar Ilmu Hukum*. 2nd Print. Jakarta: Sinar Grafika.
- 23) Notohamidjojo, O. (2011). *Soal-Soal pokok Filsafat Hukum*. Salatiga: Griya Media.
- 24) Wirassih, E. (2005). *Pranata Hukum Sebuah Telaah Sosiologis*. Semarang: PT. Suryandaru Utama.
- 25) Ali, Z. (2015). *Sosiologi Hukum*. 9th Print. Jakarta: Sinar Grafika.
- 26) Manan, A. (2006). *Aspek-Aspek Pengubah Hukum*. 3rd Print. Jakarta: Prenada Media.
- 27) Pramita, D. (2022, February 8-14). Menanti Pengurangan Sampah Plastik dari Hulu. *Tempo* (Newspaper).
- 28) Pramita, D. (2022, February 8-14). Menanti Pengurangan Sampah Plastik dari Hulu. *Tempo* (Newspaper).
- 29) Pramita, D. (2022, February 8-14). Menanti Pengurangan Sampah Plastik dari Hulu. *Tempo* (Newspaper).
- 30) Taneko, S. B. (1993). *Pokok-Pokok Studi Hukum dalam Masyarakat*. Jakarta: Rajawali Press.
- 31) Ali, Z. (2015). *Sosiologi Hukum*. 9th Print. Jakarta: Sinar Grafika.
- 32) Tobing, R. L. et.al. (2011). *Efektivitas Undang-Undang Monrey Loundering*. Jakarta: BPHN Kemenkumham RI.
- 33) Soekanto, Soerjono. (2019). *Efektivikasi Hukum dan Peranan Saksi*. Bandung: CV.Remaja Karya.
- 34) Sidharta, B.A. (2011). *Refleksi Tentang Hukum (Pengertian-Pengertian Dasar Tentang Teori Hukum)*. 3rd Print. Bandung: Citra Aditya Bakti.
- 35) Ali, Z. (2015). *Sosiologi Hukum*. 9th Print. Jakarta: Sinar Grafika.



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Push, Pull, and Mooring Effects on E-Commerce Customer Switching Intention



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ABSTRACT: This study aims to determine the effect of push, pull, and mooring on switching intention for Tokopedia e-commerce customers in Surabaya. A quantitative approach is employed in this research, with the population consisting of Surabaya people who have shopped at Tokopedia. This study aims to determine the effect of push, pull, and mooring on switching intention for Tokopedia e-commerce customers in Surabaya. A quantitative approach is employed in this research, with the population consisting of Surabaya people who have shopped at Tokopedia. The sample size of 105 respondents was selected using purposive sampling technique. Data collection involved the distribution of online questionnaires to eligible Tokopedia customers. The collected data was then analyzed using SEM-PLS method with SmartPLS. The results showed that push and pull have a positive and significant effect on switching intention. Meanwhile, mooring has a positive but insignificant effect on switching intention.

KEYWORDS: Push Factors; Pull Factors; Mooring Factors; Switching Intention; E-Commerce

I. INTRODUCTION

Tokopedia stands as one of the largest e-commerce platforms in Indonesia. Tokopedia started as an online marketplace where individuals and businesses can sell various products from different categories, including fashion, electronics, beauty, and more. With a mission of digital economic equity, Tokopedia has contributed to the growth of Indonesia's e-commerce ecosystem and has been recognized for its efforts to empower small businesses and entrepreneurs (Tokopedia, n.d). From the Gojek Tokopedia (GoTo) financial performance report in the third quarter of 2022, e-commerce Tokopedia has recorded GTV growth of 15% and gross revenue of 27% year-on-year in 3Q22. The main support was obtained from the business take rate through the implementation of a new commission scheme for consumer-to-consumer (C2C) merchant partners, the launch of a new platform fee scheme in July 2022, and the utilization of value-added services such as advertising and logistics. In addition, it's also derived from a new strategy that focuses on product innovation and moving away from growth that relies on incentives and promos (GoTo Group, 2022).

The new strategy implemented by Tokopedia aims to reduce GoTo's net loss, which has soared by 32% or equivalent to 20.9 trillion rupiah from the same period last year (GoTo Group, 2022). However, this strategy can also backfire for Tokopedia. This can be proven by the increasing number of bad reviews given by customers on Tokopedia e-commerce. Examining Tokopedia's bad reviews on the Appstore, some of them expressed disappointment with Tokopedia's new policy which was considered to have harmed customers. Not a few even compare Tokopedia with other e-commerce platforms. This situation is quite worrying for Tokopedia, because customers who are dissatisfied with a service will be very likely to switch to using other service providers that are considered more attractive (Sugandha, 2021).

Based on this phenomenon, there is a problem regarding switching intention in Tokopedia e-commerce customers. Switching intention is a factor underlying switching behavior, where it refers to the level of probability or certainty that the customer will switch to another service provider (Widhi Prasetio et al, 2022). According to Bansal et al. (2005), switching intention can be explored using the PPM framework, which involves categorizing its factors into three groups: push factors, pull factors, and mooring factors.

Therefore, the Push-Pull-Mooring (PPM) approach will be applied to examine customer switching intentions with the title "Push, Pull, and Mooring Effects on E-Commerce Customer Switching Intention".

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II. LITERATURE REVIEW AND RESEARCH DEVELOPMENT

A. *PPM Framework*

Push, Pull, and Mooring constitute the essential elements of the PPM framework, closely tied to consumer behavior. This model is utilized to comprehend shifts in consumption patterns, particularly within service providers (Bansal et al., 2005). Push, as defined by Setiani (2019), represents negative factors originating from the original service provider that stimulate the inclination to switch among customers. In the view of (Bansal et al., 2005), push elements encompass aspects like quality, satisfaction, trust, and price perception that drive individuals to abandon their existing service providers. Conversely, pull factors as articulated by Bellami (2018: 38) in (Muttuqin, 2022), are positive influencers that empower customers to transition between services. In a prior definition by Bansal et al. (2005), pull factors denote attributes possessed by alternate service providers, enticing customer attention towards making a switch. These factors that induce the desire to switch are termed "alternative attractiveness," implying positive attributes perceived as better in alternative service providers compared to the original. Lastly, mooring can be influenced by several factors prompting customers to reconsider switching desires (Sugandha, 2021). As outlined by Bansal et al. (2005), mooring factors depend on the situational context customers face, such as subjective norms, prior switching behavior, and variety seeking.

B. *Switching Intention*

Bansal et al. (2005) provides a definition for switching intention as the degree of likelihood or certainty that a customer will make a transition or shift to a different service provider. In the work by Roos, Edvardsoon, and Gustafsson (2004) as cited in (Mellandhia Shandy et al., 2022), two categories of customer switching are identified. Firstly, internal switching involves moving between units within the same company. Conversely, external switching pertains to customers opting to shift to alternative service providers external to the company, as stated by Setiani (2019). While dissatisfaction with the current service provider usually triggers switching intention, it's important to note that customers might also choose to switch even if their current service provider has a positive reputation and has delivered satisfactory shopping experiences.

C. *Push Effect on Switching Intention*

Astuti et al. (2019) stated that push have a significant impact on the switching intention of e-commerce users in Langsa. The study elucidates how the presence of shortcomings or challenges experienced in utilizing the prevailing e-commerce platform can motivate users to transition and explore more favorable e-commerce alternatives. Similar results were also shown by Muttuqin (2022) who examined the displacement of online game use. In addition, research from Sugandha (2021) states that push factors consisting of low service quality, satisfaction trust, and pricing problems, can have a positive effect on switching intention to use wifi. From some of these studies, it can be deduced that a clear connection exists between push factors and switching intentions. This connection is underscored by the observation that as the performance of the original service provider deteriorates, customers' tendency to switch correspondingly increases.

H1: Push have a positive and significant effect on switching intention for Tokopedia e-commerce customers in Surabaya.

D. *Pull Effect on Switching Intention*

Marseto et al. (2019) in their research entitled "Push, Pull, and Mooring Evaluation of User Switching Intention from Social Commerce to E-Commerce" have shown that pull have a positive impact on switching intention. In a similar study regarding customer migration on online shopping websites by Wahanandra et al. (2022), it was also shown that pull factors have a significant positive effect on switching intention. Both studies indicate that when customers perceive alternative services as having superior attributes, they are more likely to switch to those alternatives. This conclusion clarifies the relationship between the influence of pull factors and switching intention.

H2: Pull have a positive and significant effect on switching intention for Tokopedia e-commerce customers in Surabaya.

E. *Mooring Effect on Switching Intention*

Previous research conducted by Astuti et al. (2019) has proven that mooring factors, encompassing subjective norms, attitudes towards switching, switching costs, past behavior, and variety seeking can affect the switching intention of e-commerce users in Langsa. Similarly, the study by Marseto et al. (2019) has also yielded comparable findings, indicating that the mooring factor can exert a positive influence on switching intention. However, in contrast to research by Yusuf & Ratnasari (2022) which suggest that the mooring has a positive but insignificant effect on switching intention among Video on Demand application users during the Covid-19 Pandemic. Therefore, it can be concluded that mooring factors generally tend to exert a positive impact on switching intention, although outcomes may differ in distinct contexts.

H3: Mooring have a positive and significant effect on switching intention for Tokopedia e-commerce customers in Surabaya.

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III. RESEARCH METHODS

This study employs a quantitative approach, with a population consisting of Surabaya people who have previously made purchases on the Tokopedia e-commerce platform. Non-Probability Sampling is the chosen method for selecting a representative sample from this population. The study's sample consists of 105 respondents, selected through purposive sampling techniques. Data collection is facilitated by distributing online questionnaires to Tokopedia e-commerce customers in Surabaya who meet the established criteria for participation. Once the data collection phase is complete, the gathered data will undergo processing and analysis using SEM-PLS method, with the aid of Smart PLS software.

IV. RESULTS AND DISCUSSION

A. Respondent Characteristics

Based on the research questionnaire that has been distributed online to Tokopedia e-commerce customers in Surabaya, 105 respondents were obtained who meet the criteria as research samples. The characteristics of respondents in this study include gender and age group, which are presented in the following table.

Table 1. Respondent Characteristics

Characteristics	Number	Percentage
Gender Male	61	58.1%
Female	44	41.9%
Age 17 – 23 Years	55	52.4%
24 – 30 Years	12	11.4%
31 – 40 Years	25	23.8%
41 – 55 Years	13	12.4%
≥ 56 Years	0	0.0%

B. Convergent Validity

Table 2. Outer Loading (Mean, STDEV, T-Values)

	Original mple (O)	Sample lean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
X1.1.1 <- Quality	0.850958	0.844680	0.043059	0.043059	19.762582
X1.1.2 <- Quality	0.889534	0.891582	0.028536	0.028536	31.172231
X1.2.1 <- Satisfaction	0.875151	0.874904	0.023405	0.023405	37.390945
X1.2.2 <- Satisfaction	0.861214	0.855585	0.043027	0.043027	20.015623
X1.3.1 <- Trust	0.913720	0.915754	0.013001	0.013001	70.282348
X1.3.2 <- Trust	0.870527	0.868354	0.036876	0.036876	23.606792
X1.4.1 <- Price Perception	0.919872	0.920868	0.017569	0.017569	52.358556
X1.4.2 <- Price Perception	0.925634	0.926838	0.015068	0.015068	61.431158
X2.1 <- Pull	0.745851	0.749107	0.062852	0.062852	11.866813
X2.2 <- Pull	0.834481	0.836194	0.035048	0.035048	23.809537
X2.3 <- Pull	0.890609	0.890135	0.020874	0.020874	42.665124
X2.4 <- Pull	0.829208	0.829558	0.037913	0.037913	21.871214
X3.1.1 <- Subjective Norms	0.893368	0.892575	0.021035	0.021035	42.469644
X3.1.2 <- Subjective Norms	0.914945	0.913819	0.015429	0.015429	59.298996
X3.2.1 <- Prior Switching Behavior	0.872221	0.868344	0.046401	0.046401	18.797362
X3.2.2 <- Prior Switching Behavior	0.835406	0.833620	0.053526	0.053526	15.607606
X3.3.1 <- Variety Seeking	0.688254	0.624428	0.206422	0.206422	3.334201
X3.3.2 <- Variety Seeking	0.957122	0.952821	0.065176	0.065176	14.685114
Y1.1 <- Switching Intention	0.853327	0.852004	0.047767	0.047767	17.864322
Y1.2 <- Switching Intention	0.936340	0.938810	0.012765	0.012765	73.353921
Y1.3 <- Switching Intention	0.883222	0.885776	0.025878	0.025878	34.129914

Push, Pull, and Mooring Effects on E-Commerce Customer Switching Intention

Indicator validity can be assessed by examining the factor loading values between variables and their corresponding indicators. Factor loading represents the correlation between an indicator and a variable. Factor loading values exceeding 0.5 and/or TStatistics values surpassing 1.96 (Z-value at $\alpha = 0.05$) are considered indicative of satisfactory validity. In this study, all reflective indicators within each dimension of the Push (X1) and Mooring (X3) variables, as well as the indicators of the Pull (X2) and Switching Intention (Y) variables, exhibit factor loading values (original sample) greater than 0.50 and/or significant (T-Statistics values exceeding the $Z\alpha = 0.05$ (5%) threshold of 1.96). Consequently, the estimation results of all these reflective indicators can be concluded to possess convergent validity or good validity.

C. Discriminant Validity

Table 3. Average Variance Extracted (AVE)

	AVE
Quality (X1.1)	0.757700
Satisfaction (X1.2)	0.753789
Trust (X1.3)	0.796351
Price Perception (X1.4)	0.851481
Push (X1)	0.544880
Pull (X2)	0.683356
Subjective Norms (X3.1)	0.817615
Prior Switching Behavior (X3.2)	0.729336
Variety Seeking (X3.3)	0.694888
Mooring (X3)	0.388292
Switching Intention (Y)	0.794993

Validity of latent variables is considered good when convergence value of AVE is greater than 0.5. AVE represents the extent of indicator variance contained within latent variable. AVE testing results for all dimensions as well as Push (X1), Pull (X2), and Switching Intention (Y) variables exhibit good validity, with AVE values above 0.5. However, in the testing of Mooring (X3) dimension and variable, the validity is less satisfactory, as AVE values fall below 0.5.

D. Composite Reliability

Table 4. Composite Reliability

	Composite Reliability
Quality (X1.1)	0.862091
Satisfaction (X1.2)	0.859604
Trust (X1.3)	0.886573
Price Perception (X1.4)	0.919783
Push (X1)	0.905150
Pull (X2)	0.895820
Subjective Norms (X3.1)	0.899644
Prior Switching Behavior (X3.2)	0.843425
Variety Seeking (X3.3)	0.816058
Mooring (X3)	0.778855
Switching Intention (Y)	0.920738

The construct reliability, assessed using the composite reliability value, is considered reliable if it exceeds 0.70. Thus, these indicators can be considered consistent in measuring latent variables. The testing outcomes of composite reliability for all dimensions as well as Push (X1) and Mooring (X3) variables, along with Pull (X2) and Switching Intention (Y) variable, reveal composite reliability values exceeding 0.70. This indicates that overall, the constructs (dimensions) and variables in this study are reliable.

Push, Pull, and Mooring Effects on E-Commerce Customer Switching Intention

E. Path Analysis

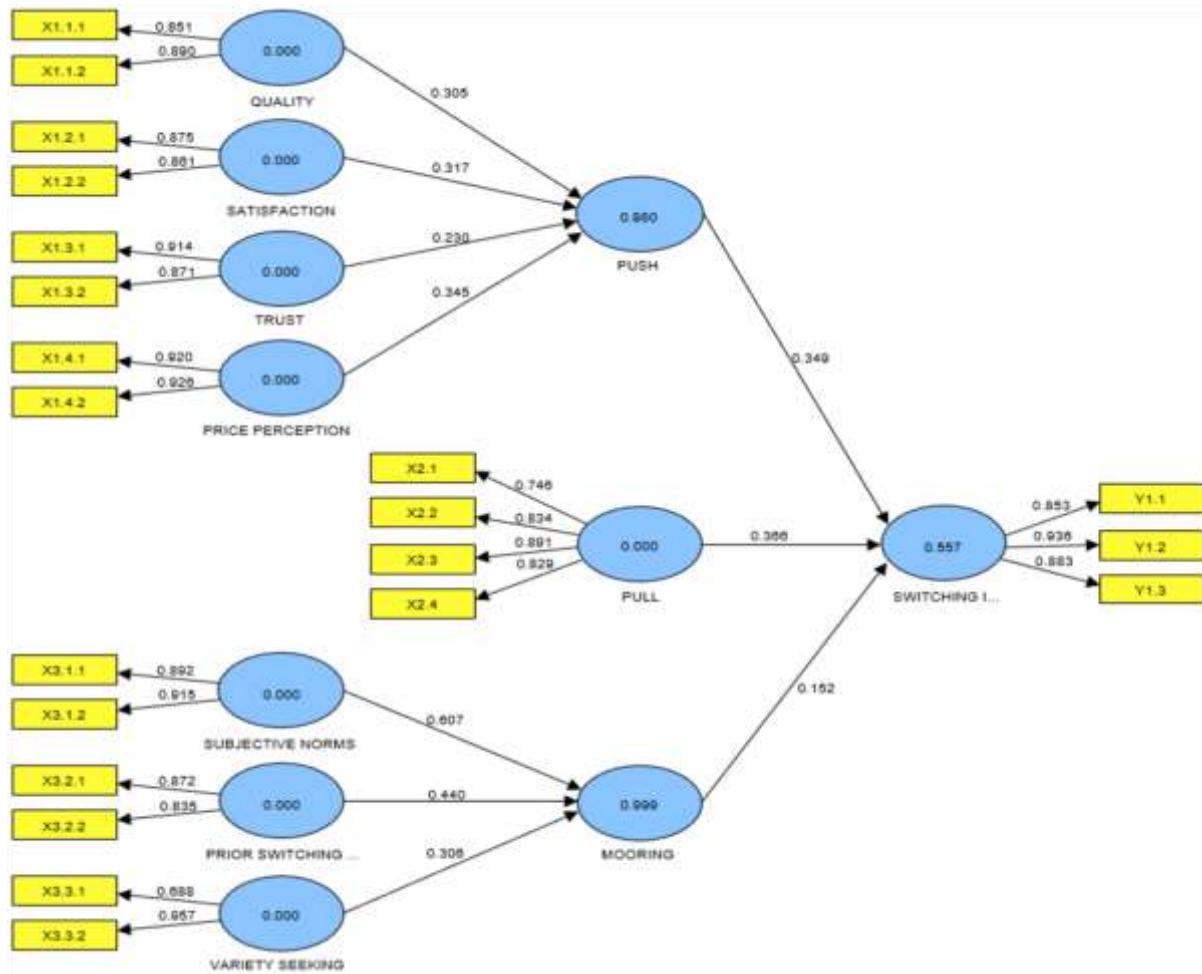


Figure 1. Outer Model with Factor Loading, Path Coefficients and R-Square values

F. R-Square

Table 5. R-Square

	R Square
Push (X1)	
Pull (X2)	
Mooring (X3)	
Switching Intention (Y)	0.556972

Inner model testing can be evaluated through the examination of R-square values, which serves as a test for goodness of fit of the model's equations between latent variables. R-square (R^2) value indicates the extent to which exogenous (independent) variables within the model can explain the variations in the endogenous (dependent) variables. R-square value of 0.556972 presented in the table above can be interpreted to mean that the model is capable of explaining the phenomenon of Switching Intention (Y) which is influenced by exogenous variables including Push (X1), Pull (X2), and Mooring (X3), accounting for 55.69% of the variance. On the other hand, the remaining 44.31% (100% - 55.69%) is accounted for by other variables beyond the scope of this study (excluding Push, Pull, and Mooring variables).

G. Hypothesis Testing

Table 6. Path Coefficients (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
Push -> Switching Intention	0.349164	0.330004	0.127431	0.127431	2.740025
Pull -> Switching Intention	0.365565	0.384371	0.116005	0.116005	3.151291
Mooring -> Switching Intention	0.151541	0.157833	0.114771	0.114771	1.320384

Push, Pull, and Mooring Effects on E-Commerce Customer Switching Intention

H1: Push has a positive and significant effect on switching intention is accepted. This is supported by path coefficients of 0.349164 and a T-Statistics value of 2.740025, which exceeds the critical value of $Z\alpha = 0.05$ (5%) = 1.96, indicating statistical significance (positive).

H2: Pull has a positive and significant effect on switching intention is accepted. This is supported by path coefficients of 0.365565 and a T-Statistics value of 3.151291, which exceeds the critical value of $Z\alpha = 0.05$ (5%) = 1.96, indicating statistical significance (positive).

H3: Mooring has a positive and significant effect on switching intention is not accepted. This is supported by path coefficients of 0.151541 and a T-Statistics value of 1.320384, which is below the critical value of $Z\alpha = 0.05$ (5%) = 1.96, indicating lack of statistical significance (positive).

H. Push Effect on Switching Intention

Based on conducted hypothesis testing, it's evident that push have a positive effect on switching intention for Tokopedia ecommerce customers in Surabaya. Through descriptive analysis, it was found that the price perception dimension with indicators reflecting additional costs charged by Tokopedia makes the total payment higher has the greatest influence on customer switching intention. The implementation of new fee schemes by Tokopedia, such as increasing shipping costs through the use of additional logistics services and adding service and application fees has led to an overall increase in costs for each transaction. The findings of this study align with prior research conducted by Sugandha (2021) concerning switching intention in the context of Wi-Fi usage and by Muttaqin, F. (2022) who investigated switching behavior in online game usage. Both studies demonstrate that push factors have a positive influence on customer switching intentions.

I. Pull Effect on Switching Intention

Based on conducted hypothesis testing, it's evident that pull have a positive and significant effect on switching intention for Tokopedia e-commerce customers in Surabaya. In addition, the results of descriptive analysis show the indicator with statement that shopping in other e-commerce will be more profitable as the most influential indicator on customer switching intention. This suggests that the factor motivating customers to switch to another platform is the perception that shopping on a different ecommerce platform will offer more advantages. In this context, customers have the perception that other platforms provide greater benefits, such as lower prices, more appealing discounts, more advantageous loyalty programs, or a better shopping experience. Therefore, customers tend to feel attracted to switch to other platforms that are considered more profitable than Tokopedia. This finding is consistent with previous research by Marseto et al. (2019) and Wahanandra et al., (2022) which also examined consumer switching on online shopping sites. The study shows that pull factors have a significant positive effect on customer switching intentions.

J. Mooring Effect on Switching Intention

Based on conducted hypothesis testing, it's evident that mooring has a positive influence on customer switching intentions on Tokopedia e-commerce platform in Surabaya, although the effect is not statistically significant. From the results of descriptive analysis on mooring variable, it was found that the dimension of variety seeking, with indicators reflecting customers' preference to continue shopping on Tokopedia rather than other e-commerce platforms has the least impact on influencing customer switching intention. This indicates that customers tend to have lower loyalty retention towards Tokopedia and are more open to exploring alternatives on other e-commerce platforms. This might be due to customers perceiving that Tokopedia cannot provide adequate variation in the products, brands, or types of services they are seeking. As a result, customers are interested in exploring other e-commerce platforms that offer more appealing benefits or better suit their needs. This emphasizes that even though the impact of the mooring factor is not statistically significant, there is still an indication that this factor plays a role in influencing customers' decisions to switch from Tokopedia to alternative e-commerce platforms. These findings are consistent with previous research by Yusuf & Ratnasari (2022), which indicated that the mooring factor had a positive but statistically insignificant influence on customer switching intention for Video on Demand application users during the Covid-19 pandemic.

V. CONCLUSIONS

The results showed that push, pull, and mooring can affect switching intention of Tokopedia e-commerce customers in Surabaya. Push which includes quality, satisfaction, trust, and price perception, positively and significantly affects customers' intention to switch to alternative e-commerce platforms. Pull which reflects the alternative attractiveness has a positive and significant influence on customers' switching intention. Meanwhile, moorings such as subjective norms, prior switching behavior, and variety seeking have a positive but insignificant impact on switching intention.

Push, Pull, and Mooring Effects on E-Commerce Customer Switching Intention

These results contribute to a deeper comprehension of the determinants of switching intention in e-commerce customers, with particular emphasis on the significance of push and pull factors in customers' decision making processes when considering the switch to alternative platforms.

REFERENCES

- 1) Astuti, Y., Zarman, N., Tinggi Ilmu Manajemen Pase Langsa, S., & Tinggi Ilmu Ekonomi Sabang Abstrak, S. (2019). Perilaku Switching Behavior Pengguna Electronic Commerce (e-Ceommerce) di Kota Langsa dengan Model Migrasi Konsumen Push, Pull Mooring. In *SIMEN (Akuntansi dan Manajemen) STIES* (Vol. 10).
- 2) Bansal, H. S., Taylor, S. F., & James, Y. S. (2005). "Migrating" to new service providers: Toward a unifying framework of consumers' switching behaviors. In *Journal of the Academy of Marketing Science* (Vol. 33, Issue 1, pp. 96–115).
- 3) Mellandhia Shandy, V., Alfansi, L., Mulyana, A., Budi Harsanto, dan, Padjadjaran, U., & Bengkulu, U. (2022). Niat Perpindahan Pelanggan pada E-Marketplace di Kota Bengkulu. In *Creative Research Management Journal* (Vol. 5).
- 4) Setiyani, C. (2019). Pengaruh Push–Pull–Mooring Factors (PPM) terhadap Customers Switching Intention dari Bank Konvensional ke Bank Syariah (Studi Kasus pada Masyarakat Desa Sumogawe, Kecamatan Getasan, Kabupaten Semarang) (Doctoral dissertation, IAIN Salatiga).
- 5) Muttaqin, F. (2022). Pengaruh Push, Pull, and Mooring Effect terhadap Switching Intention Konsumen Mobile Legends: Bang Bang pada League Of Legends: Wild Rift. In *Sibatik Journal: Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan*, 1(10), 2121–2132. <https://doi.org/10.54443/sibatik.v1i10.311>
- 6) Sugandha, A. P., & Indarwati, T. A. (2021). Pengaruh Push, Pull, dan Mooring terhadap Switching Intention pada Konsumen Pengguna Wifi di Era Pandemi Covid-19. In *Jurnal Ilmu Manajemen* (Vol. 9).
- 7) Marseto, F., Handayani, P. W., & Pinem, A. A. (2019). Push, Pull, and Mooring Evaluation of User Switching Intention from Social Commerce to E-Commerce. In *International Conference on Information Management and Technology* (Vol. 1).
- 8) Widhi Prasetio, M., Pascasarjana Magister Manajemen, P., Ekonomi dan Bisnis, F., & Jendral Soedirman, U. (2022). Perilaku Beralih Pelanggan dalam Pembelian Produk Digital melalui Aplikasi E-Commerce. In *Bisnis dan Akuntansi (JEBA)* (Vol. 24). <http://www.qontak.com/blog/perhatikan-5-tren-perilaku-konsumen-e-commerce-di-tahun->
- 9) Yusuf, H. G., & Ratnasari, A. (2022). Pengaruh Push Pull Mooring terhadap Switching Intention pada Pengguna Aplikasi Video On Demand di Masa Pandemi Covid-19. *Indonesian Journal of Business Intelligence (IJUBI)*, 5(1), 17. <https://doi.org/10.21927/ijubi.v5i1.2321>
- 10) GoTo Group. (22, November 21). Grup GoTo Umumkan Kinerja Kuat di Kuartal Ketiga 2022. <https://www.gotocompany.com/news/press/pencapaian-kinerja-kuartal-tiga>
- 11) Our Stories. (n.d). Tokopedia. <https://www.tokopedia.com/about/our-story/>



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Numerical Simulation of Airflow Distribution in the Tunnel of Cairo Metro Line 3 Using CFD



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ABSTRACT: One of the problems facing the underground tunnels is lacking enough fresh air for passengers inside the subway. Also, because of the friction of the train with the railways, high heat is generated. So, the use of computational fluid dynamics to distribute the required fresh air flow at the lowest possible cost is critical for the tunnels. In this research, Computational Fluid Dynamics (CFD) is used to perform 3D modelling and simulation for the tunnel of Cairo Metro Line No. 3. The standard k-ε turbulence model was used in the CFD analysis to simulate the ventilation airflow in a 1075m tunnel length. The simulation reveals that the tunnel airflow rate induced by the speed of the fan is more desirable. Also, the addition of a jet fan causes an eddy current that improving the efficiency of tunnel ventilation, thereby greatly reducing ventilation time, and increasing efficiency in cases where the diameter of the tunnel equals 15 m, the speed of the fan is 1480 r.p.m, and the air flow rate is 80-120 m³/s. This led to improve fan speed efficiency and airflow distribution in the tunnel. Similar way of simulation is used for road tunnel ventilation.

KEYWORDS: Tunnels, Ventilation systems, Numerical simulation, Computational Fluid Dynamics (CFD)

NOMENCLATURE

ρ , Is the fluid density, Kg/m ³	p , Is pressure Pa
μ , Is the molecular(dynamic) viscosity, Pa.s	C_μ , Constant
\vec{f} , Is the body force per unit mass, N/kg	t , Is the time, sec
k , Is the turbulence kinetic energy, KJ/ kg	τ_{ij} , Is the viscous stress tensor
\mathbf{u}_{avg} , Is Reynolds averaged velocity vector, m/s	\vec{V} , Direction of tunnel velocity, m/s
ϵ , Is the turbulence kinetic energy dissipation rate, m ² /s ³	μ_t , The turbulence viscosity, m ² /s
δ_{ij} , Are the components of the velocity vector in the x_i and x_j directions	\bar{t} , Is the transport coefficient
λ , Is the coefficient of bulk viscosity NS/m ²	V_i, V_j , Are vector velocities m/s
x_i, x_j , Are denote mutually perpendicular coordinate directions	r.p.m, Revolution per minute

1. INTRODUCTION

Today, online monitoring systems can detect the tunnel airflow volume and velocity. However, there are different techniques for studying the non-uniform distribution of airflow and the sensor-measured velocity, as stated by Parra et al [1, 2]. As such, it is quite necessary to study numerical simulation of airflow distribution in the tunnel at present. So, mathematical models based on Computational Fluid Dynamics (CFD) are becoming popular as predictive tools for airflow distribution in the tunnel, as stated by Richardson and Harlow [3, 4]. To further increase the use of these models in the design methods for improving the efficiency of tunnel ventilation, they often use general-purpose computer programmes and require extensive training [5]. Also, they used the buoyancy K- ω SST model to represent the turbulent transport, component models for jet fans, and ventilation ducts of airflow distribution in the tunnel, as stated by Tu et al [6].

Vega et al.[7] found that (CFD) is considered very efficient for improving the efficiency of tunnel ventilation. Passi et al. and Hofer et al. [8, 9] they said that tunnel ventilation is a crucial component of road and subway designs. Caliendo et al. and Li et

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al.[10, 11] also, they said that mechanical ventilation and natural ventilation are the two main types of tunnel ventilation. Also, Wang et al.[12] recommended using (CFD) in tunnels to help the jet fans exhaust polluted air. Myrvang and Khawaja [13] used (CFD) for a minimum number of fans to analyze how air develops inside a tunnel from the inlet to the outlet. Betta et al.[14] performed a numerical simulation of the jet fan's airflow distribution in the tunnel using (CFD).

Yang et al.[15] used numerical simulation for the operation of pumps and fans by ratio ranging between 59.5 and 73.4% to improve efficiency in tunnels. In 2014, Zhao and co-workers [16] postulated that few have used experimental and theoretical techniques to quantitatively study the average velocity distribution in circular and rectangular tunnels. Kamal et al.[17] used a 2D finite element commercial software, of airflow distribution in the tunnel of Cairo Metro Line No 4. A model for the development of air flow and the effect of jet fans for longitudinal and curved tunnels using computational fluid dynamics CFD, has been used by Jacques and Wauters [18] and Wang et al.[19].

Numerical simulation of airflow distribution in the tunnel is essential in the case of (CFD) to improve distribution of speed and pressure in an appropriate manner from inside a tunnel inlet to the outlet. Hence the paper covers highlighted research gap, which has been ignored by some researchers. Hence, the CFD modelling by using ANSYS FLUENT software has been applied for numerical simulation of airflow distribution in the tunnel. So, the case study would be in the tunnel of Cairo Metro number 3 with a length of 1075m.

Objectives of the work:

In this paper, it is intended to study numerical simulation of airflow distribution in the tunnel of Cairo Metro Line 3 to improve the ventilation system, the paper aims to:

- Apply computational fluid dynamics (CFD) modelling using ANSYS FLUENT software for numerical simulation of airflow distribution in the tunnel.
- Determine the maximum speed and appropriate pressure inside the tunnel for air flow in an appropriate manner.
- Reduce ventilation time and increasing fan efficiency to improve airflow distribution in the tunnel.
- Determine the best curve of velocity distribution inside the tunnel.

2. LITERATURE REVIEW

Many studies have been conducted on modelling and simulation of tunnel ventilation systems.

Adjiski and Despodov (2019) utilized a 3D computational fluid dynamics (CFD) model with "ANSYS FLUENT" software to evaluate various factors, such as face velocity and turbulent airflow patterns, to optimize ventilation system efficiency. They found the model was able to reduce energy consumption and increase auxiliary ventilation system[20].

McPherson (1993) and Acuña and Lowndes (2014) used computational fluid dynamics in the layout of the underground ventilation system in mines and tunnels. They have found that the underground network of tunnels is connected to the surface through vertical shafts or ramps, acting as inlets and outlets for ventilation and exits for personnel and equipment. They concluded that using CFD improves the efficiency of tunnel ventilation [21, 22].

Hamed et al. (2023) used computational fluid dynamics (CFD) to design and calculate the tunnel ventilation system for Cairo Metro Line 3. They intended to study the numerical simulation of airflow distribution in the tunnel of Cairo Metro Line 3 to improve the ventilation system. As a result, by using (CFD) they found that the determination of air quantity, location of fans, and regulators to distribute the required fresh air flow at the lowest possible cost has led to improve efficiency of the tunnel ventilation[23].

Wang et al. (2012) recommended using computational fluid dynamics (CFD) in tunnels to help the jet fans exhaust polluted air[12]. Also, Myrvang and Khawaja (2018) used (CFD) for a minimum number of fans to analyze how air develops inside a tunnel from the inlet to the outlet. They found that pumping huge amounts of fresh air into the tunnel and controlling the speed of the fans led to lower power consumption and an increased rate of ventilation[13]. And Betta et al (2010) performed a numerical simulation of the jet fan's airflow distribution in the tunnel using (CFD). They found an increase in fresh air for passengers inside the subway[14].

Lewus (2023) demonstrated that using program CFD (ANSYS FLUENT) of tunnels greatly affects the airflow field inside the tunnel. He found that the air flow from the jet fan spreads more quickly and less energy consumption and high fan efficiency[24]. Additionally, in (2023) Jafari et al investigated the effect of a moving vehicle on the airflow field in curved and straight tunnels by using numerical simulation (CFD). They found that the speed of the fan, has been increased in straight tunnels by using numerical simulation[25].

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3. MODEL DESCRIPTION

3.1. The tunnel and train

The previous studies showed that the numerical analysis method is sufficiently accurate, thus it was used to simulate the distribution of airflow in the tunnel[1]. In this paper, the tunnel investigated is part of the tunnel of Cairo Metro Line No.3. Fig. 1 shows the dimensions of the tunnel and train. The maximum width and height of the tunnel cross section are 9.8 m and 6.3 m, respectively. The large arch radius is 4.9 m. The maximum width and height of the train are 3.3 m and 3.9 m, respectively as in shown Figure.1. The speed of the train ranges from 80–120 km/hour and the total length is 137.4 m. There is a numerical model of the tunnel with a metro train inside by software CFD and the length of the tunnel under study is 1075 m, which is shown in Figure.2.

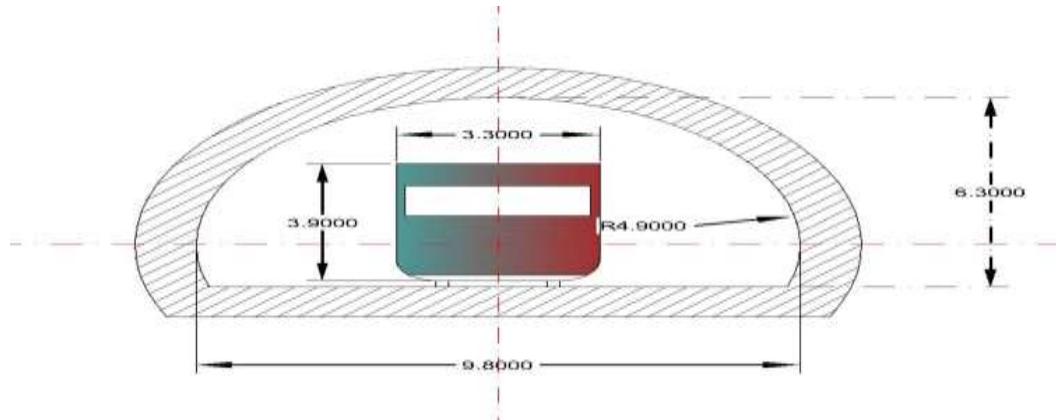


Figure.1. Cross-section of the tunnel

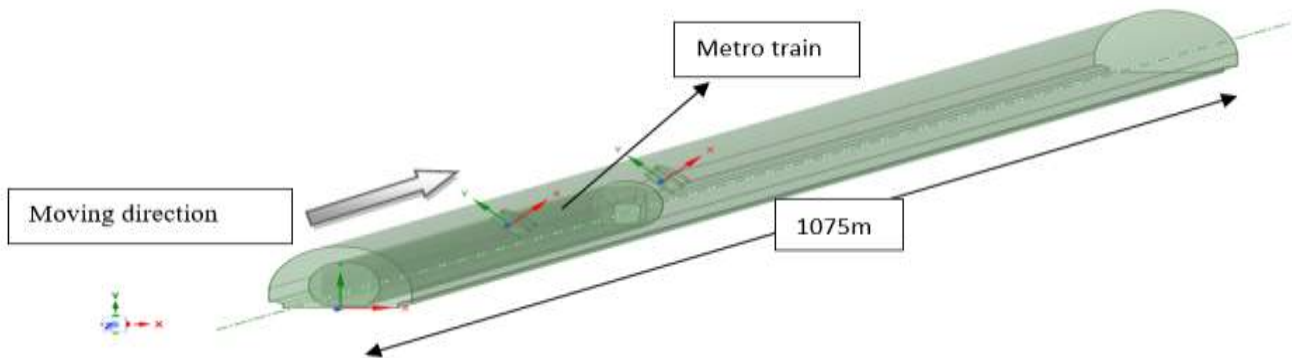


Figure.2. Numerical model of the metro tunnel with a train inside

4. NUMERICAL SIMULATION

4.1. Governing equations

The numerical analysis of Greater Cairo Metro tunnels in this research will include airflow distribution in the tunnel of Cairo Metro Line No.3.

The governing equation determines whether the flow in the tunnel is ideal gas, Rayleigh flow, Fano flow, viscous or inviscous, laminar, or turbulent, compressible, or incompressible. Any flow, whether internal or external, can be described by three fundamental governing equations: the continuity equation (conservation of mass), the conservation of momentum (to describe the 3D change in shear forces and pressure), and the conservation of energy (to describe the heat transfer according to the pressure difference).

The following assumptions were adopted when creating the mathematical model: the airflow is incompressible, the tunnel wall is not adiabatic, there are passengers, and smoke and dust are disregarded in order to determine the least amount. So, according to the fluid dynamics theory, the following Equations (1), (2), (3), (4), (5), (6), and (7) affiliated with the Ansys company are used to describe the airflow in tunnels. Also, the energy equation is not activated in order to maintain the temperature inside the tunnel and determine the air quantity to distribute the required fresh air flow fans under different speeds in the tunnel (r.p.m).

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- **Conservation of mass:**

The first term of the equation indicates that if the flow is compressible so the density of the flow changes with time.

$$\frac{\partial \rho}{\partial t} + \nabla \cdot (\rho \vec{V}) = 0 \quad (1)$$

The second term in the equation indicates the variation of the density in x-direction and y-direction and z-direction.

$$\frac{\partial \rho}{\partial t} + \rho(\nabla \cdot \vec{V}) = 0 \quad (2)$$

- **Conservation of momentum in 1D or (Navier stokes equation).**

The Navier-Stokes Equation, which also refers to the equation for the conservation of linear momentum, is frequently used in computational fluid dynamics (CFD) to refer to both of the momentum and continuity equations as well as the energy equation. To represent the turbulent transport, component models for jet fans, and ventilation ducts of airflow distribution in the tunnel, as seen in equation (3).

$$\rho \frac{D\vec{V}}{Dt} = -\nabla p + \Delta \cdot \vec{\tau} + \rho \vec{f} \quad (3)$$

In order to be able to use a eulerian description equation can get parameter \vec{f} which is the body force per unit mass. And $\vec{\tau}$ is the viscous stress tensor for Newtonian fluids viscous stresses only. Also, it is known that $\vec{\tau}$ needs to be symmetric for velocity and density. Therefore, the friction and heat generated by the train during its movement inside the tunnel at different speeds can be known from Equations (4),(5),(6), and (7).

$$\rho \left[\frac{\partial \vec{V}}{\partial t} + (\vec{V} \cdot \nabla) \vec{V} \right] = -\nabla p + \nabla \cdot \vec{\tau} + \rho \vec{f} \quad (4)$$

$$\tau_{ij} = \mu \left(\frac{\partial V_i}{\partial x_j} + \frac{\partial V_j}{\partial x_i} \right) + \lambda (\nabla \cdot \vec{V}) \delta_{ij} \quad (5)$$

$$\lambda + \frac{2}{3} \mu = 0 \quad (6)$$

$$\tau_{ij} = \left(\frac{\partial V_i}{\partial x_j} + \frac{\partial V_j}{\partial x_i} - \frac{2}{3} (\nabla \cdot \vec{V}) \delta_{ij} \right) \quad (7)$$

4.2. Turbulence modeling

The standard model k-ε was used to calculate the turbulence and diffusion of the airflow. Also, to obtain the velocities and pressure inputs and to define the wall zones, the temperature and rotational rpm of two fans, the velocity of the train, and the viscosity and relative humidity of the air inside the tunnel and outside the tunnel can be calculated from Equations (8) and (9). The sources for k and ε are given by:

k equation

$$k = 1.5 (U_{avg})^2 \quad (8)$$

ε equation

$$\varepsilon = C_\mu \frac{k^2}{\mu_t} \quad (9)$$

4.3. Boundary conditions

The aims of the boundary conditions of the tunnel are as follows[7].

- The velocity and scalar characteristics of air flow at intake borders are defined.
- The total pressure at flow inlets is defined.
- In compressible flows, mass flow intake is used to specify a mass flow rate at an inlet.
- In the event of backflow, additional scalar variables are used to specify the static pressure at flow outlets using the pressure outlet.

So, in this case, to increase the velocity of air flow entering the tunnel, two suction fans are used on each side of the tunnel, one from the inlet by 90 m and the other from the inlet by 190 m. Also, the velocity of the train is approximately 120 km/h (33.33 m/s).

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To determine the flow rate of each fan and the pressure drop caused by each fan in another case. The train's velocity will be 126 km/h (35 m/s), and the length of the tunnel will be 1075 m, so the time the train will move in the tunnel will be 20 seconds. So, the minimum time the fluid properties will change is 20 seconds when the velocity of the train is 126 km/h (35 m/s). So, the problem in the tunnel is a lack of fresh air for passengers inside the subway. As a result of the increase in the maximum speed of the train. So, as a result of the friction of the train with the railways inside the tunnel, more heat is generated.

4.4. Solver settings

CFD (ANSYS FLUENT) has been selected for numerical simulation of airflow distribution in the tunnel of Cairo Metro Line 3 induced by single and double trains. In this study, 3D, unstable, compressible, turbulent models, $k-\epsilon$ turbulence, and Navier-Stokes equations have been used. The $k-\epsilon$ turbulence and Navier-Stokes equations model is commonly utilized in the numerical simulation of trains passing through tunnels, as stated by Deng et al. (2020) and Izadi et al. (2020) [26, 27]. Such method has been validated by many researchers[28, 29]. Table 1 gives the detailed solver settings for the numerical simulation of airflow distribution in the tunnel.

Table1: Detailed solver settings of the numerical simulation

Parameters	Setting
Turbulent model	$k-\epsilon$ model
Governing equations	Conservation of mass and Navier stokes equation
Gradient	Green-Gauss cell-based

From Table (1), it is noticed that the $k-\epsilon$ model, Conservation of mass, Navier-Stokes equation, and Green-Gauss cell-based numerical simulation of trains passing through tunnels have been used. And the $k-\epsilon$ turbulence and Navier-Stokes equations model is commonly utilized in the numerical simulation in CFD software.

4.5. Mesh analysis

Meshes around the tunnel body were discretized into hexahedral grids from type (poly hexacore). Because the tunnel is a two-directional tunnel (1075 m in length) and the length of the train is 183.2 m, at each node, the pressure, fluid density, air velocity, and temperature of the tunnel are calculated through the node located in the center of the elements. The programme distributes the solution to each node and then divides the whole body. The tunnel's hexahedral grid has a length of 0.1 m along the x axis and a maximum size of 0.2 m in the y and z directions, which leads to a lot of element meshes as shown in Figure. 3.

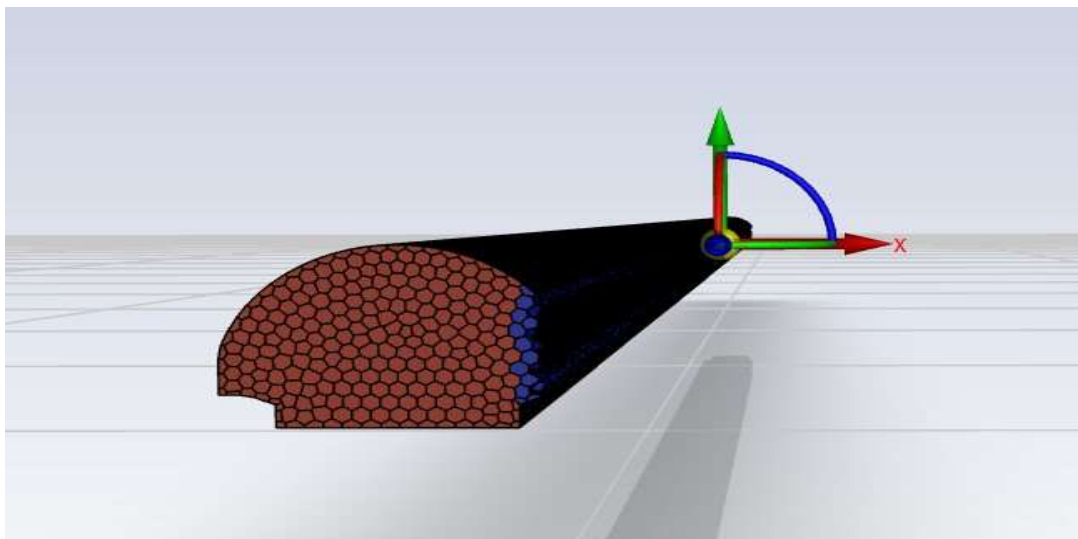


Figure.3. Meshes

5. RESULTS AND DISCUSSION

The residuals and iteration processes are derived from mesh analyses. The iterations are the number of calculation times for the accuracy of the solution, meaning that the more it increases, the residuals decrease. That is, the relationship between the iterations and the residuals is an inverse relationship, and this gives the correct values and high accuracy in the solution. As the

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residuals represent the error values resulting from the numerical analysis, the more iterations, the closer get to the correct values of the error indicator at the residuals. This gives correct values and high accuracy in the solution, as shown in Figure.4.

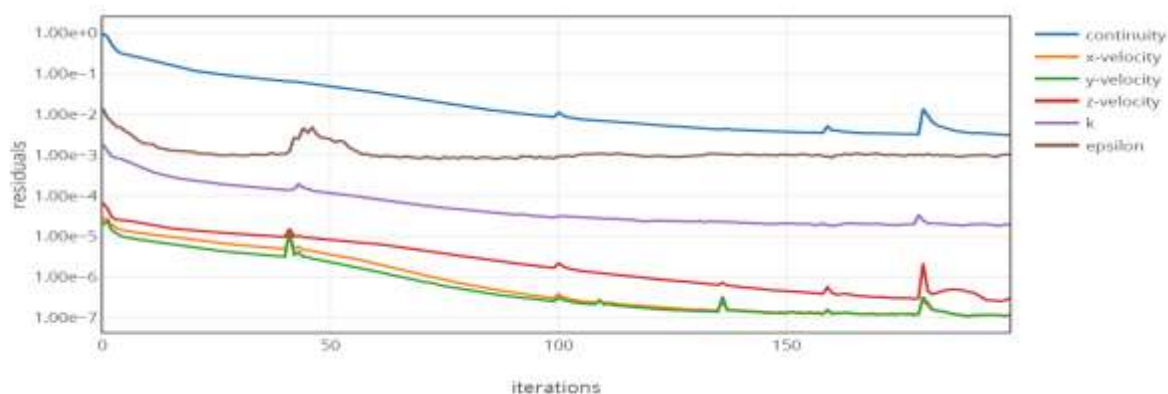


Figure. 4. Relationship between residuals and iterations

From Figure. (4), It can be seen that the higher the number of iterations, the lower the error values in residuals at 100 iterations. This demonstrates the accuracy of the solution resulting from the numerical analysis process, saving time and energy. also gives correct values and high accuracy in the solution.

The comparison of the relation between time of train movement and pressure in the tunnel until the train reaches the end of the tunnel is presented in Figure.5. The train speed is maintained until it reaches 80 seconds. This led to an improvement in the tunnel's atmosphere.

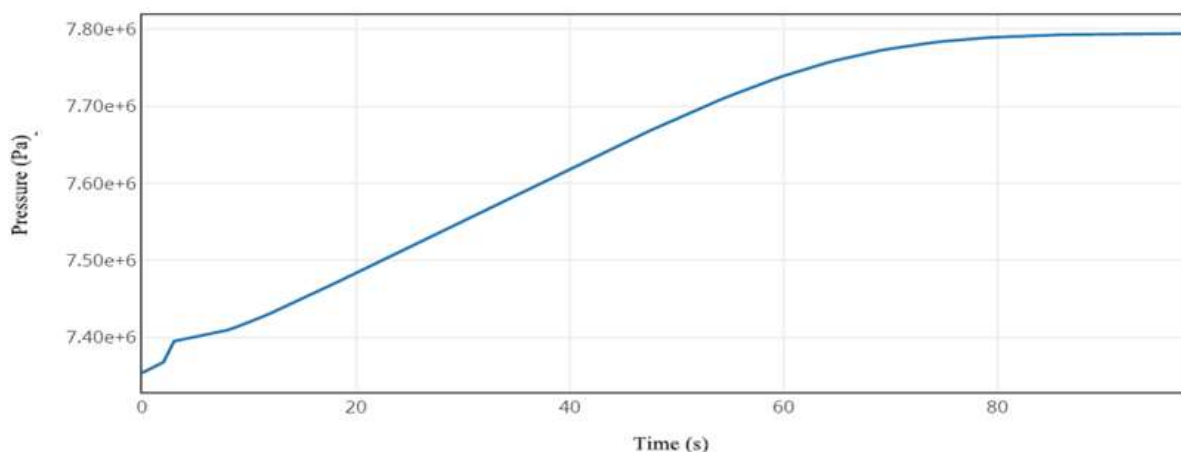


Figure. 5. Relation between time of train movement and pressure in the tunnel

From Figure. (5), it can be noticed that the train speed is maintained until it reaches 80 seconds. As a result, the amount of ventilation exiting the fan at equal speeds along the tunnel is sufficient. This indicates the accuracy of the solution and the correct results of the mesh analysis.

5.1. Velocity variation

Velocity variation is a process called mesh optimization, which is a relationship that relates the fan's speed with the number of elements in the cells, to flow the air inside the tunnel at equal speeds along the tunnel. Figure.6. illustrates the fan(s) speed, r.p.m., in relation to the number of elements, millions, in the cells to determine the value of the fan(s) speed at a specific element of the cells.

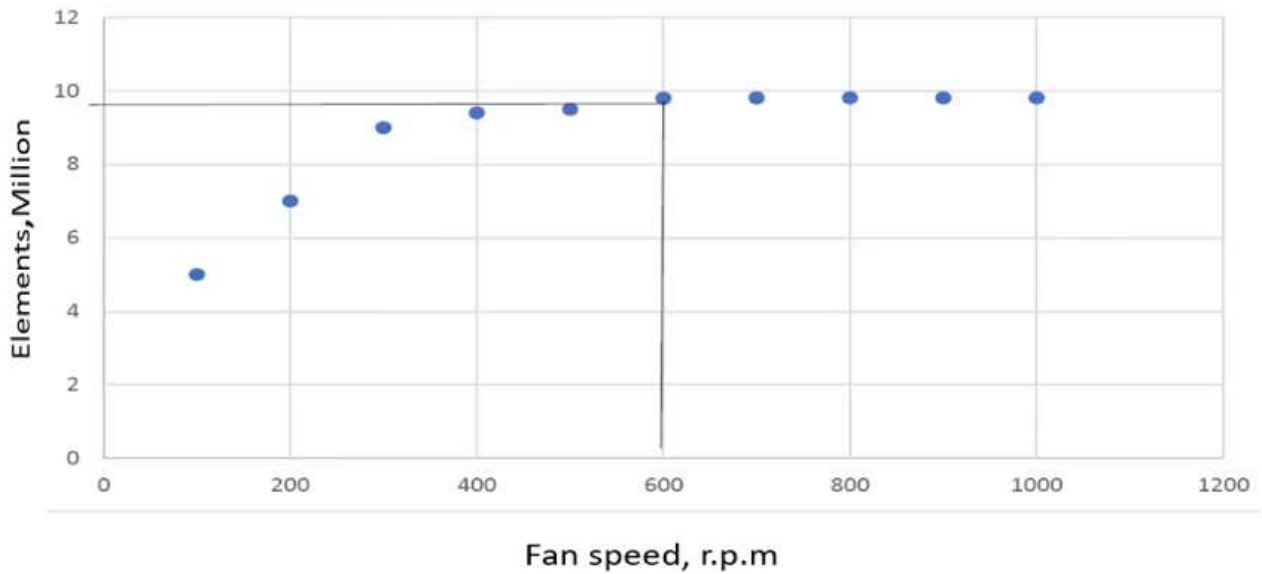


Figure.6. Velocity variation for fans

From Figure. (6), it can be found that the speeds change from 200 to 1200 r.p.m. At 9.5 million cells, the actual speed (600 r.p.m) is attained with acceptable accuracy. This led to improving fan speed efficiency and airflow distribution in the tunnel. Different values of velocity magnitude to determine the best velocity simulation of airflow distribution in the tunnel are shown in Figure.7. Contours are at the vertical center plane of the tunnel with a traditional jet fan ventilation system. The magnified view shows the details of the airflow field, and the velocity magnitudes are in m/s.

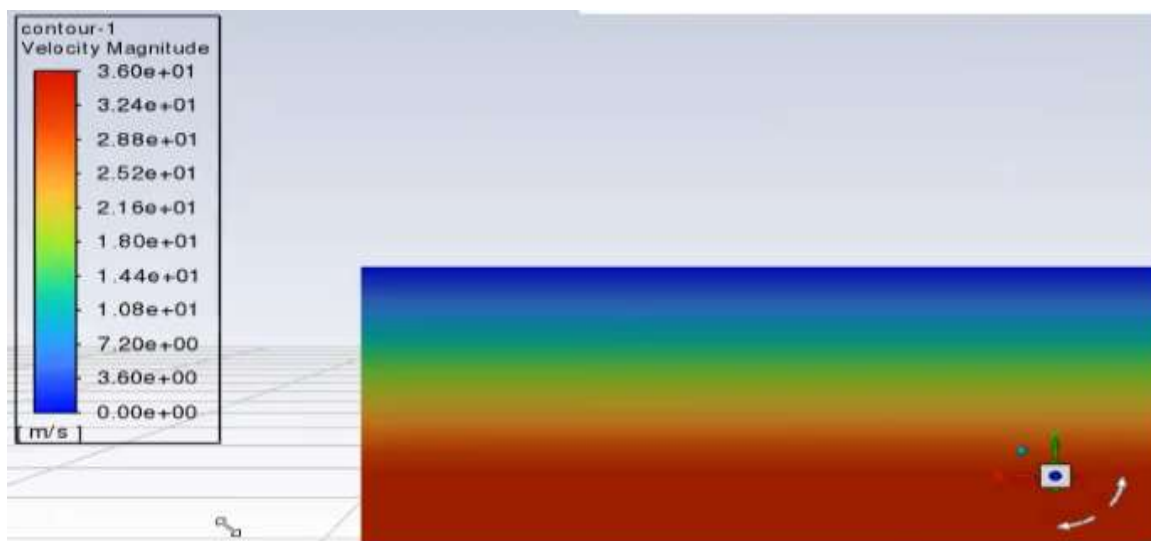


Figure. 7. Layers of velocity magnitude at the vertical center plane of the tunnel

From Figure. (7), it can be noticed that the change in velocities as a result of the different layers of the fluid in relation to the length of the tunnel, from 0.0 m/s to 3.6e+00 m/s, and velocity variation for fans. This leads to reducing fan energy costs, including their operating performance.

5.2. Pressure Field

The dispersion of ventilation rate pumped by the fan into the ventilation tunnel at the moment the train enters the tunnel is illustrated in Figure. 8.

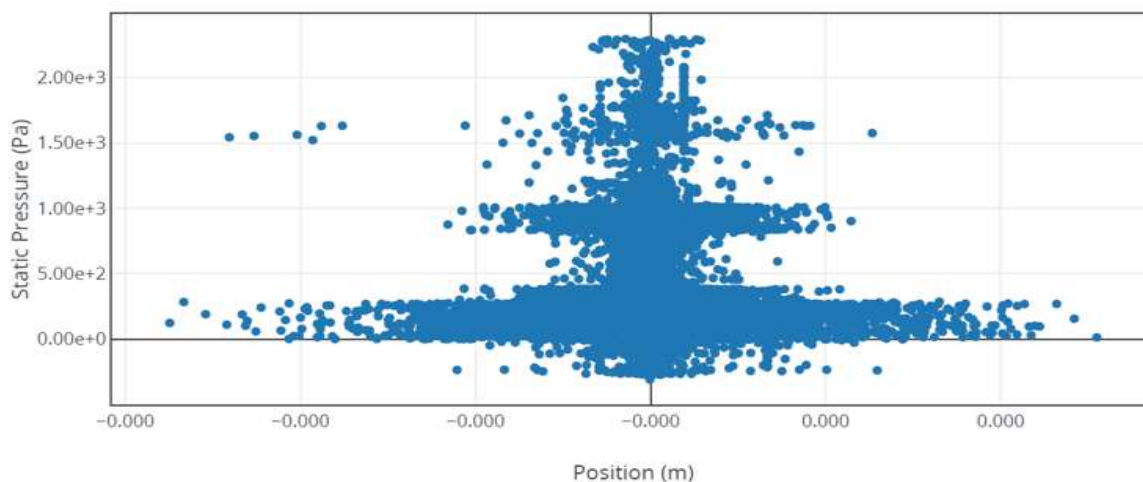


Figure.8. Shows a 3D of the dispersion of ventilation rate according to static pressure

From Figure. (8), It is noticed that the largest amount of air dispersion starts at the moment the train enters the tunnel and returns to normal after train departure. Where (-0.000 Pascal) is the time when the air meets the fan when the train passes by, and there is a significant change in pressure.

Figure. 9. shows different values of pressure magnitude to determine the best velocity simulation of airflow distribution in the tunnel. Pressure magnitude contours at the vertical center plane of the tunnel with a traditional jet fan ventilation system. The magnified view shows the details of the airflow field.

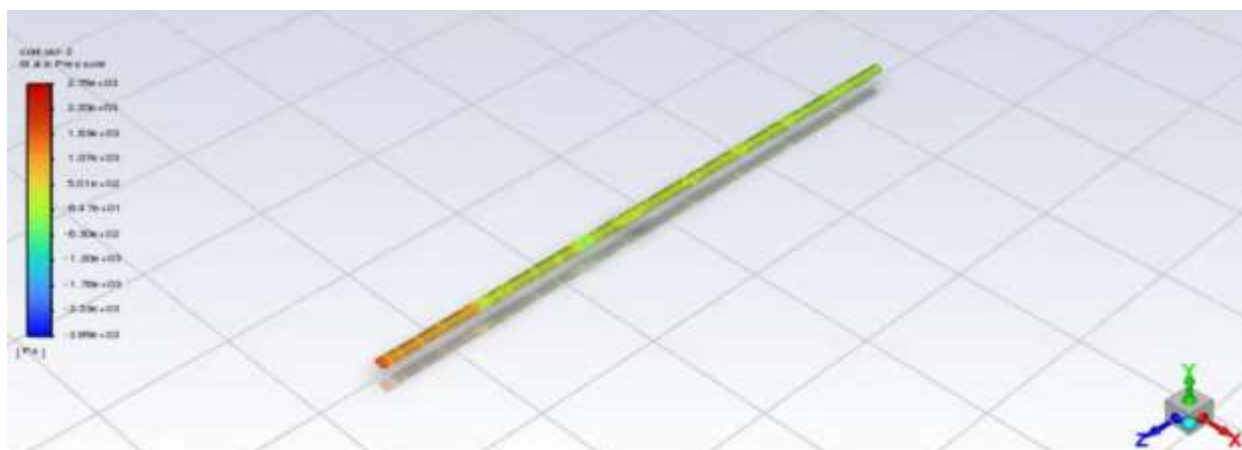


Figure. 9. Layers of pressure magnitude, and the pressure magnitudes are in Pascals.

From Figure. (9), it is noticed that the change in pressure as a result of the different layers of the fluid in relation to the length of the tunnel starts at -2.89×10^3 pascal and ends at 2.76×10^3 pascal. This improves the performance of the fan, leading to low energy consumption.

5.3. Effect of inlet airflow velocity on the studied tunnel

Tunnel ventilation is essential for either a curved or longitudinal tunnel. Curved tunnels are more problematic than longitudinal tunnels, so they need continuous ventilation, and the problem of the unavailability of ventilation as a result of high heat generation in the tunnel has a detrimental effect on passengers. Using the modeling, all the ventilation strategies have been analyzed and it has been demonstrated that the actual ventilation system, if fully operational, is able to provide sufficient ventilation in all zones. The results of the effect of tunnel dimensions by changing the diameter and length of the tunnel with fan speed (r.p.m) differences are given in Table 2.

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Table 2: Impact of dimensions on the tunnel ventilation

Length of tunnel, m	Diameter of tunnel, m	Speed of fan, r.p.m	Air flow rate m ³ /s
260	5	440	37.5
537.5	10	880	80
1075	15	1480	80-120

From Table (2), it can be found that the velocity distribution inside the tunnel for air flow is in an appropriate manner at a speed of 1480 (r.p.m) and the air flow rate is 80–120 m³/s . It is the best way to improve the efficiency of tunnel ventilation and study the dimensions of the tunnel.

Figure. 10. Presents the relationship between critical velocity, heat release rate, and tunnel diameter. It is the best curve for velocity distribution inside the tunnel for air flow in an appropriate manner at a fan speed of 1480 (r.p.m), tunnel length of tunnel of 1075m, and an air flow rate of 80-120 m³/s . And the addition of a jet fan causes an eddy current that improving the efficiency of tunnel ventilation, thereby greatly reducing ventilation time, and increasing efficiency.

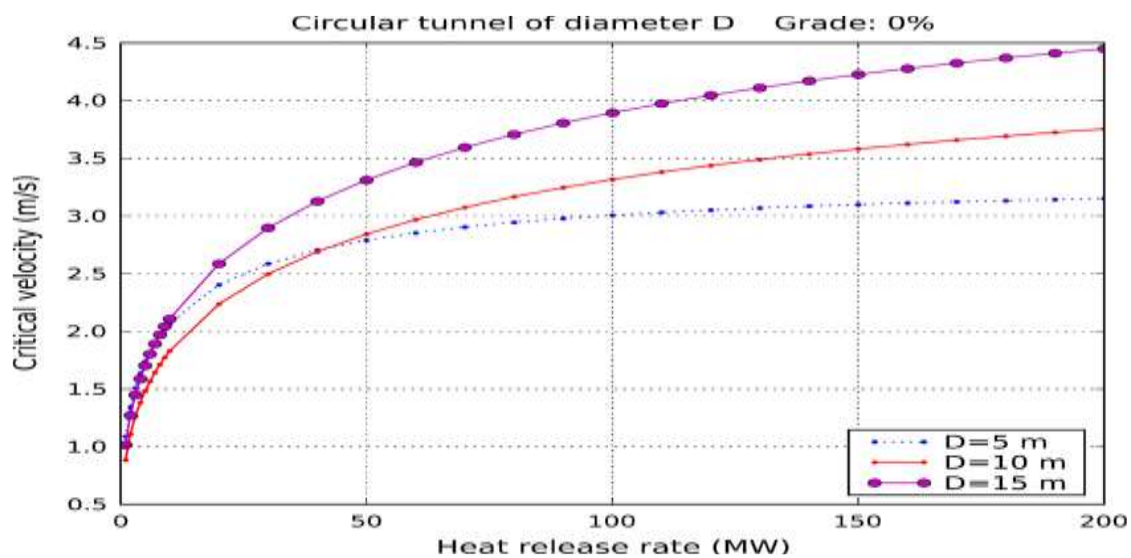


Figure.10. The relationship between critical velocity, heat release rate, and tunnel diameter

From Fig. (10), it can be seen that study of the effect of tunnel dimensions influences the efficiency of tunnel ventilation through the study of ventilation parameters. By changing air velocity, tunnel diameter, length of tunnel, speed of the fan (r.p.m), and other characteristics and studying this change in the shape. So, Simulation results reveal that the computational fluid dynamics (ANSYS FLUENT) software deals with the sections and lengths of the tunnel to sense the change in the amount of air using fans at different speeds (r.p.m). Thus, it gives flexibility in dealing with tunnels of different diameters and lengths. So that it is used in different ventilation conditions and different dimensions of a mine or a tunnel

6. CONCLUSIONS

The dynamic mesh of the CFD method is used in numerical simulation of airflow distribution in the tunnel of Cairo Metro Line 3. The numerical method is verified by the data of the National Authority for Tunnels, from which the ventilation rate, Q, and static head pressure, H, were obtained. Afterwards, pressure changes on the surface of the tunnel in the above scenarios are analyzed. From the present study, the followings can be concluded:

- The Characteristic equations obtained from the application of CFD have been used to describe the average velocity distribution, which provides the theoretical basis for accurately measuring the average velocity and ventilation flow rates in tunnels.
- The higher the number of iterations, the lower the error values in residuals. This demonstrates the accuracy of the solution resulting from the numerical analysis process, saving time and energy. also gives correct values and high accuracy in the solution.

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- The speed is maintained until it reaches 80 seconds. As a result, the amount of ventilation exiting the fan at equal speeds along the tunnel is sufficient.
- The speeds change from 200 to 1200 r.p.m. At 9.5 million cells, the actual speed (600 r.p.m) is attained with acceptable accuracy. This led to improving fan speed efficiency and airflow distribution in the tunnel.
- It is noticed that the largest amount of air dispersion starts at the moment the train enters the tunnel and returns to normal after train departure. Where (-0.000 Pascal) is the time when the air meets the fan when the train passes by, and there is a significant change in pressure.
- The change in pressure as a result of the different layers of the fluid in relation to the length of the tunnel starts at -2.89e+03 pascal and ends at 2.76e+03 pascal. This improves the performance of the fan, leading to low energy consumption.
- Computational Fluid Dynamics (ANSYS FLUENT) software gives flexibility in dealing with tunnels of different diameters and lengths. So that it is used in different ventilation conditions and different dimensions of an underground mine or tunnel.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the National Authority of Cairo Metro Tunnels for their assistance and cooperation to complete this work.

REFERENCES

- 1) Ding, C., X. He, and Nie, B. 2015. Numerical and experimental research on “key ring” distribution of ventilation in mine tunnels. *Journal of Liaoning Technical University (Natural Science)*, 34(10): pp. 1131-1136.
- 2) Ding, C. 2016. Numerical and experimental research on the average velocity distribution in the trapezoid tunnels. *Journal of Safety Science and Technology*,12(1): pp. 28-32.
- 3) Richardson, L.F. 1922. *Weather prediction by numerical process.*:p.50.
- 4) Harlow, F.H. *NUMERICAL METHODS FOR FLUID DYNAMICS, AN ANNOTATED BIBLIOGRAPHY.* 1969, Los Alamos National Lab.(LANL), Los Alamos, NM (United States).pp.1-13.
- 5) Xu, G., Luxbacher, KD., Ragab, S., and Xu, J. 2017. Computational fluid dynamics applied to mining engineering: a review. *International Journal of Mining, Reclamation and Environment*, 31(4): pp. 251-275.
- 6) Tu, J., Yeoh, G., Liu, C., and Tao, Y. 2023. *Computational fluid dynamics: a practical approach.*: p.50.
- 7) Vega, M.G., Diaz, KMA., Ore, JMF., and Tajadura, RB. 2008. Numerical 3D simulation of a longitudinal ventilation system: memorial tunnel case. *Tunnelling and Underground Space Technology*, 23(5): pp. 539-551.
- 8) Passi, A., Nagendra, S.S., and Maiya, M. 2021. Characteristics of indoor air quality in underground metro stations: A critical review. *Building and Environment*.198: pp. 107-907.
- 9) Hofer, P., Eder, J., and Strau, C. 2021. Decision Support within Complex Subterranean Operations. in *NATO Science and Technology Organization—Meeting Proceedings Paper (STO-MP-MSG-184)*.NATO STO: North Atlantic Treaty Organization.p.184.
- 10) Caliendo, C., Genovese, G., and Russo, I. 2020. Risk analysis of road tunnels: A computational fluid dynamic model for assessing the effects of natural ventilation. *Applied Sciences*, 11(1): p. 32.
- 11) Li, A. and Jones, P. 2000. Developments in strategies used for natural and mechanical ventilation in China. *Indoor and Built Environment*, 9(2): pp. 65-74.
- 12) Wang, F., Wang, M., and Wang, Q. 2012. Numerical study of effects of deflected angles of jet fans on the normal ventilation in a curved tunnel. *Tunnelling and Underground Space Technology*, 31: pp. 80-85.
- 13) Myrvang, T. and Khawaja, H. 2018. Validation of air ventilation in tunnels, using experiments and computational fluid dynamics. pp.1-16.
- 14) Betta, V., Cacetta, F., Musto, M., and Rotondo, G. 2010. Fluid dynamic performances of traditional and alternative jet fans in tunnel longitudinal ventilation systems. *Tunnelling and Underground Space Technology*, 25(4): pp. 415-422.
- 15) Yang, Z., Yu, Z., Yu, L., and Ma, F. 2014. Research on frequency conversion technology of metro station's ventilation and air-conditioning system. *Applied thermal engineering*, 69(1-2): pp. 123-129.
- 16) Zhao, D., Huang, F., Chen, S., Wang, d and Wang, D. 2014. Relationship between point air velocity and average air velocity in circular roadway. *Journal of Liaoning Technical University (Natural Science)*, 33(12): pp. 165-165.
- 17) Kamal, H., Hussein, M., and Akl, A. 2021. Parametric study of twin tunnel under seismic loads for Cairo Metro Line No. 4. *HBRC Journal*, 17(1): pp. 137-156.
- 18) Jacques, E. and Wauters, P. 1999. Improving the ventilation efficiency of jet fans in longitudinally ventilated rectangular ducts.p.13.

Numerical Simulation of Airflow Distribution in the Tunnel of Cairo Metro Line 3 Using CFD

- 19) Wang, F., Wang, M., He, S., Zhang, J., and Deng, Y. 2010. Computational study of effects of jet fans on the ventilation of a highway curved tunnel. *Tunnelling and underground space technology*, 25(4): pp. 382-390.
- 20) Adjiski, V., and Despodov, Z. 2019. Determining optimal distance from outlet of auxiliary forcing ventilation system to development of heading in underground mines. *Journal of Mining and Environment*, 10(4): pp. 821-832.
- 21) Acuña, E.I. and Lowndes, I.S. 2014. A review of primary mine ventilation system optimization. *Interfaces*, 44(2): pp. 163-175.
- 22) McPherson, M.J. 1993. Subsurface ventilation systems. *Subsurface ventilation and environmental engineering*: pp. 91-133.
- 23) Hamed, S., Abdel Rasoul, E., and Abuel-Kassem, M. 2023. Design and calculation of tunnel ventilation system for Cairo Metro Line 3 (A case study). *JES. Journal of Engineering Sciences*, 51(1): pp. 1-14.
- 24) Lewus, D.C. *Simulation of High Tunnel Ventilation Using Computational Fluid Dynamics*. 2023, Rutgers The State University of New Jersey, School of Graduate Studies. p.13.
- 25) Jafari, S., Farhanieh, B., and Afshin, H. 2023. Numerical investigation of critical velocity in curved tunnels: Parametric study and establishment of new model. *Tunnelling and Underground Space Technology*, 135: pp. 10-21.
- 26) Deng, E., He, X., Ye, Y., and Zhu, Z. 2020. Transient aerodynamic performance of high-speed trains when passing through an infrastructure consisting of tunnel–bridge–tunnel under crosswind. *Tunnelling and Underground Space Technology*, 102: pp. 103-440.
- 27) Izadi, T., Aboualia, O., Mehrabian, M.A., and Salmanzadeh, M. 2020. Investigation of the effects of different parameters on the generated pressure waves inside the tunnels. *SN Applied Sciences*, 2: pp. 1-13.
- 28) Chen, Z., Liu, T., Zhou, X., and Niu, J. 2017. Impact of ambient wind on aerodynamic performance when two trains intersect inside a tunnel. *Journal of Wind Engineering and Industrial Aerodynamics*, 169: pp. 139-155.
- 29) Rabani, M. and Faghih, A.K. 2015. Numerical analysis of airflow around a passenger train entering the tunnel. *Tunnelling and Underground Space Technology*, 45: pp. 203-213.



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Analysis of Workload and Work Discipline on Employee Performance PDAM Tirta Dhaha Kediri City Engineering Division



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ABSTRACT: A company needs maximum performance produced by an employee. Good performance is one of the important factors in the company's success rate. So to support this performance, the company needs to pay attention to the distribution of workload according to the portion and the level of employee discipline applied. This study aims to determine the performance of PDAM Tirta Dhaha Kediri City Engineering Division employees through the influence of workload and work discipline. As one of the companies engaged in services in the Kediri City area, the Company is required to provide maximum service. This often leads to an increase in the workload given so that it has an impact on reducing performance. In addition, the lack of employee discipline will reduce performance. The population of this study were engineering division employees with a sample size of 39 respondents. The sampling method uses saturated sample technique. The data analysis used in this research is Partial Least Square (PLS). Based on the results of the study, it can be seen that workload and work discipline have a contribution to employee performance.

KEYWORDS: Workload; Work Discipline; Employee Performance

INTRODUCTION

In the current era, all aspects of life are required to follow the dynamic development of globalization, one of which is in the industrial sector. The competition that occurs will be wider, the threat of foreign companies requires an organization to have competent human resources to maintain its existence. The existence of superior human resources is used as a reference to achieve the peak of success of an organization. Therefore, the existence of human resources is very important to level the ability of employees effectively and efficiently. Both of these things can certainly be achieved with optimal performance. In this case, a company is expected to create a comfortable working environment so as to enable employees to improve their maximum performance and abilities, especially in terms of performance.

The level of success of the company can be seen from how well the performance has been achieved by human resources in the company. (Sudrajat, 2022). Performance can be interpreted as the results of work or achievements that have been achieved by employees. Performance can be said to be good if the implementation of tasks carried out according to company standards. Vice versa, if the work results obtained are not maximized, the performance carried out by employees can be said to be low. Therefore, it is important to have employees with good work abilities.

The study was conducted at PDAM Tirta Dhaha which is one of the companies in Kediri City and is engaged in clean water sorting services. As one of the companies that stands in the service sector, PDAM Tirta Dhaha is required to provide maximum service to customers, this is because the measure of the success of a company, both goods and services, can be seen through customer satisfaction with what the company has produced. (Iskandar 2018). In addition, the accuracy and speed in handling customer complaints is one of the important aspects needed by service companies. In this case, the company has not been optimal when providing services because there are still unresolved customer complaints. There are problems that customers often complain about, namely the occurrence of disturbances in the quality of water that is not clean, the small discharge of water that comes out at certain hours, the error of officers when reading the water meter and the occurrence of leaks in the pipeline so that this indicates a decrease in performance which is indicated by the non-completion of work targets related to repairing disturbances experienced by customers.

Many factors cause the problem not to be resolved in the disturbance felt by consumers, it is possible that it occurs because of excessive workload where it can be seen from the number of workers who do not match the amount of work performed. The amount of workload given makes technicians often do work outside of working hours or what is usually called overtime work,

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this is because every day there are incoming customer complaints that must be resolved immediately while the previous work is still in the process of being handled. Especially in a certain period of time the company gets mass disturbances which of course requires a lot of technicians to solve it. With excessive workload, of course, it will affect the decrease in work performance produced by an employee. (Hermawan 2022).

In addition to workload factors, employee performance can be influenced by problems with employee discipline as seen from the attendance rate. In a company, both government and private sectors, discipline is one of the keys to success in realizing organizational goals. Based on the data obtained, there is an increase in absenteeism by PDAM Tirta Dhaha employees. In addition, many employees are still late for work and at certain working hours some employees are not at work. If this continues to happen, it will certainly affect performance and hinder the achievement of company goals, this is because the work process requires employees who have a high level of discipline so that the work done can be completed in a timely manner. So it can be concluded that the level of discipline will affect performance. (Hustia 2020)

From several phenomena related to performance, it is considered necessary to conduct research on workload factors and work discipline to solve the problems that occur so that the company is able to maintain the trust given by customers. In addition, this research can also be used as an effort to prepare the company to produce effective and efficient human resources.

STUDY OF THEORY AND HYPOTHESES

Performance

In the competitive business world, companies need a high performance. Performance is used as a measure of the success of a company in working relationships with employees to foster a harmonious work environment situation, so that maximum employee productivity can be created. (Rusyana, et al 2023).

Performance is the work achievement of an employee both in quantity and quality when carrying out and completing the tasks assigned to him in accordance with the role within the company and has been determined by his superiors. Meanwhile, according to Wijaya & Milena (2023) performance is the result of work achieved by employees in carrying out tasks on the basis of their abilities, skills, experience and efforts made while in the work environment. Someone who has good performance certainly has a high sense of responsibility, dares to take risks, has optimistic goals and is able to accept and apply the input obtained to improve their performance. So it can be concluded that performance is the result of work or work performance on an employee's work target in completing a job that the leader has assigned to him and done within a certain period of time in accordance with established policies.

To achieve optimal performance, there are several factors that determine it. According to Himma (2020). two factors that affect performance are ability which consists of potential ability (IQ) and ability (Knowledge + Skill) and motivation which arises from the attitude of a person in dealing with work situations. according to Astuti et al in (Gunawan, et al 2023) factors that affect performance are divided into internal factors and external factors. The indicators used in the study are Work Quality, Work Quantity, Effectiveness and Independence.

Workload

A company has determined the workload of employees in the form of work standards in accordance with their field of work. In this case, if an employee works in accordance with the standards that have been set, it is certainly not a problem. But on the contrary, if an employee is unable to meet the standards, it will cause excessive workload. So it is necessary to determine or divide the jobdesk in a job so that employees feel comfortable when carrying out work because it is in accordance with their abilities and certainly will not be a burden for these employees.

Workload is a target that must be completed within a certain time. (Febriana & Kustini 2022). According to Ramadhanty, et al (2023) *workload* is a difference between the quantity and quality of an employee according to the demands of the tasks he gets. So it can be concluded that workload is a set of work that must be completed within a certain period in accordance with company time standards.

Excessive workload will have a negative impact on employee performance. These impacts are decreased work quality, customer complaints and increased absenteeism rates. (Irawati & Carolinna 2017). According to Koesomowidjojo in (Diana 2019) workload indicators are work conditions, working time and work targets that must be achieved.

Work Discipline

Disciplinary attitudes are important to be applied in a company environment, this is because with a disciplinary attitude, the smooth implementation of employee work can be used as a support request to obtain ideal results. (Kusuma & Kustini 2021).

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Work Discipline is an attitude of respect, obedience and obedience to the rules and norms that apply both in writing and not where it is an effort to increase the awareness of an employee to fulfill all company regulations. (Lestari & Permatasari 2023).

According to Sutrisno in (Azhar, et al 2020) several factors that influence work discipline, namely the size of the compensation provided by the company, the presence or absence of a leader's example, the presence or absence of definite rules, the courage of a leader when making decisions and actions, wise leader supervision and attention to employees and the culture created in the company environment related to strengthening discipline.

So it can be concluded that work discipline is the behavior of an employee to obey all applicable rules or social norms in accordance with company provisions and is carried out with full awareness without coercion from outside parties. When an employee does not obey a regulation, of course, the company will impose sanctions according to the customer.

The indicators used in the study are attendance, work procedures and responsibility.

Hypothesis

H1: Workload has negative effect on Employee Performance

H2: Work Discipline has a positive effect on Employee Performance

RESEARCH METHODS

This research was conducted at PDAM Tirta Dhaha Kediri City. The population determined for this study were employees of the engineering division totaling 39 people. In this study using *non probability sampling* technique with saturated sampling technique. For data collection methods used in this study are interviews and questionnaires. The scoring technique used to measure indicators in the research questionnaire is a Likert scale of 1-5. The data analysis technique in this study used *Partial Least Square* (PLS).

RESEARCH RESULTS AND DISCUSSION

The questionnaire used as a data collection method contains statements of each indicator of the variables used in the study, namely Workload (X1), Work Discipline (X2), and Employee Performance (Y). The questionnaire was distributed to 39 respondents.

The Partial Least Square (PLS) measurement model uses exogenous variables that reflect their indicators, namely the workload variable (X1), work discipline (X2), and employee performance (Y) which are loaded by looking at the size of the factor, because all indicators in this model use reflection, so the table used is the *outer loading output*.

In this study, the validity of indicators is measured by looking at the *factor loading* value (*original sample*). *Factor loading* shows the correlation between indicators and variables, it is said that the validity is sufficient if it is greater than 0.7 and or the *T-Statistic* value is greater than 1.96 (Z value at $\alpha = 0.05$).

Based on the research, it can be seen that all reflective indicators on workload variables and work discipline, as well as employee performance show *factor loading* greater than 0.70 and or significant (T-Statistic value more than Z value $\alpha = 0.05$ (5%) = 1.96), thus the estimation results of all indicators have met convergent validity or validity is considered good.

The next measurement model is the *Average Variance Extracted* (AVE) value which represents a measure of the indicator variance contained in the latent variable. The value of the convergent AVE > 0.5 determines that the validity of the latent variable is sufficient. Reflective indicator variables can be found from the AVE value of each construct (variable). If the AVE value of each structure is > 0.5, a fairly good model is needed.

Based on the research conducted, the AVE value on the workload variable is 0.744, then on the work discipline variable is 0.742, and on the employee performance variable is 0.739, so that all AVE values are > 0.50. So it can be concluded that the measurement has met the criteria for convergent validity and is declared ideal.

Reliability test is conducted to measure the consistency of respondents' answers. A questionnaire can be said to be reliable if the *Composite Reliability* value limit is > 0.70. According to the research results, it is known that the *Composite Reliability* value in all indicators has a coefficient value above 0.70. The result of the *Composite Reliability* value for the workload variable is 0.897, the work discipline variable is 0.896, and the performance variable is 0.918. So it can be concluded that the value gets results > 0.70. This means that all respondents' answers were declared consistent and the research questionnaire was declared reliable.

Furthermore, the model accuracy or fit model is tested by looking at the R-Square value. R-Square testing if it has a value of 0.750 can be known that the model is strong, a value of 0.500 is known to be a moderate model, and if the value is 0.250 the model is weak. The following is the R-Square table:

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Table 1. R-Square

	R ²
Y_Performance	0,553

Source: data processed, 2023

From the table above, it is known that the value of $R^2 = 0.553$. This can be interpreted that the model is able to resolve the phenomenon of employee performance which is influenced by independent variables including workload and work discipline with a variance of 55.3%. While the remaining 44.7% is influenced by other variables.

Hypothesis testing is carried out through a direct effect significance test which aims to test the effect of the independent variable on the dependent variable. Hypothesis testing is carried out through three tests, including *t-statistic*, *p-value*, and *path coefficients*. Hypothesis testing in this study was carried out through direct testing using the SEM PLS analysis method.

Table 2. Path Coefficients

	Path Coefficient	Average Sample (M)	Standard Deviation (STDEV)	T Statistic (IO/STDEV)	P Values
X1_Workload -> Y_Performance	-0,248	-0,261	0,123	2,021	0,044
X2_Work Discipline -> Y_Performance	0,698	0,693	0,109	6,380	0,000

Source: data processed, 2023

From the table above, it can be concluded that the hypothesis stating that workload (X1) has a negative effect on Employee Performance (Y) can be accepted with a path coefficient of -0.248, and a T-statistic value of 2.021 greater than the Z value $\alpha = 0.5$ (5%) = 1.96 and a P-Value of 0.044 < 0.5 so that the results are significantly negative. Work Discipline (X2) has a positive effect on Employee Performance (Y) can be accepted with a path coefficient of 0.698, and a T-statistic value of 6.380 greater than the Z value $\alpha = 0.5$ (5%) = 1.96 and a P-Value of 0.000 < 0.05 so that the results are significantly positive. The results of this study can be described with the PLS measurement model as follows

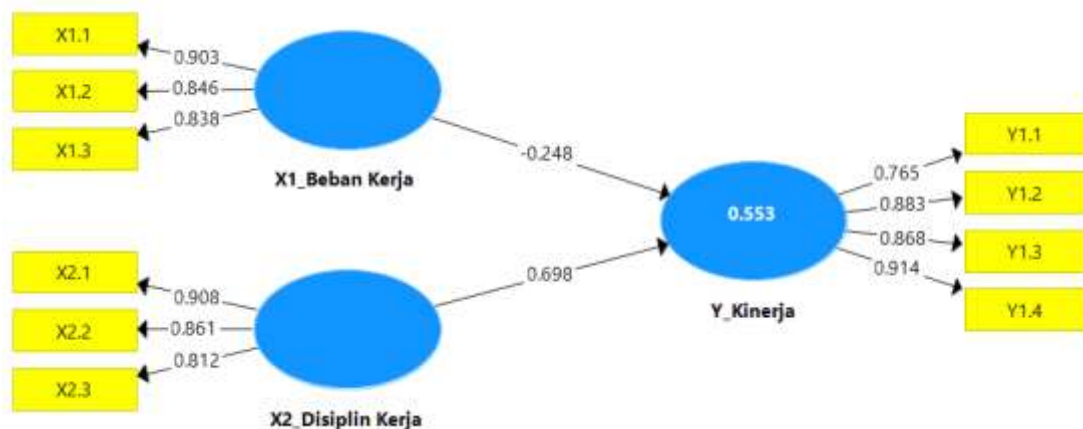


Figure 1. PLS Measurement Model

Source: data processed, 2023

From the PLS output image above, it can be seen the magnitude of the *loading factor* value which is located above the arrow between the variables and indicators. In addition, it is also known the magnitude of the *path coefficients* above the arrow line between the exogenous variables and the endogenous variables. And it can be seen that the amount of R-Square is in the circle of endogenous variables (employee performance variables).

Effect of Workload (X1) on Employee Performance (Y)

Based on the results of research that has been conducted, it is found that workload has a negative and significant influence on the performance of PDAM Tirta Dhaha Kediri City employees. The influence between workload and employee performance means that if there is a high workload, it will cause a decrease in employee performance. Working conditions are the highest

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indicator that affects performance. It shows that the number of technicians at PDAM Tirta Dhaha does not match the amount of work available. So in this case, something is needed in the aspect of giving tasks that are in accordance with the number of employees, their abilities and the working hours given so that in carrying out a job employees will feel more comfortable and the work results obtained are optimal. The results of this study are in accordance with research conducted by Ernanto & Kustini (2022) that workload is able to affect employee performance due to the unbalanced number of human resources. This research is in line with research conducted by, Layuk et al. (2019) and (Rindorindo, et al 2019) with the result that workload has a negative and significant effect on employee performance.

The Effect of Work Discipline (X2) on Employee Performance (Y)

Based on the results of the research conducted, it is found that work discipline has a positive and significant influence on the performance of PDAM Tirta Dhaha Kediri City employees so that the hypothesis can be accepted. The existence of this influence can be interpreted that if work discipline is high, employee performance will also increase. Employee attendance rate is the strongest indicator that can affect employee discipline. In this case, employees of PDAM Tirta Dhaha technical division still often do absent work, besides that employees are absent during morning roll call. This indiscipline will affect performance. The supervision, evaluation and reward system can be applied within the company to overcome the problem of indiscipline. In this case, the role of the head of engineering is needed during the process of improving work discipline. So a company is said to be able to gain success when employees within the scope of the company are able to apply discipline, especially in terms of attendance rates. The results of this study are in line with research conducted by Hardyansyah & Kustini (2023) which states that if employees are able to be responsible for their work, and obey the applicable regulations, the performance in a company will increase. In addition, this research is also supported by the results of research by Yuliadi & Sutioningsih, (2022), Desi & Liantifa, (2023), Dewi & Marpaung (2023) which states that work discipline has a positive and significant effect on employee performance.

CONCLUSION

Based on the results of the research conducted, it can be concluded that workload and work discipline have an influence on employee performance. The advice given regarding workload is that cooperation is needed between the head of engineering and human resources to analyze employee needs with a level of workload that is tailored to the competencies and abilities needed by the company so that employee performance and company performance get optimal results. In terms of work discipline, the company is expected to further improve supervision and evaluation related to the level of attendance to employees. The existence of a *reward* and *punishment* given is also needed so that employees in carrying out their duties have motivation and realize how important the value of discipline is and do work with responsibility in accordance with the company's SOP. That way the achievement of targets and company performance will increase. For future researchers it is recommended to add other variables in examining employee performance variables with other relevant objects.

REFERENCES

- 1) Azhar, Muhammad Elfi, Deissy Utami Nurdin, And Yudi Siswadi. 2020. "Pengaruh Disiplin Kerja Dan Kompensasi Terhadap Kepuasan Kerja Karyawan." Jurnal Humaniora 4 (1): 46–60. <http://jurnal.abulyatama.ac.id/humaniora>.
- 2) Dani, Aditia Rachman, And Siti Mujanah. 2021. "Pengaruh Servant Leadership, Beban Kerja Dan Kreativitas Terhadap Kinerja Karyawan Dinas Perhubungan Kabupaten Bangkalan Madura Dengan Komitmen Organisasi Sebagai Variabel Intervening." Media Mahardhika 19 (3).
- 3) Dewi, Silvia Novita, And Netti Natarida Marpaung. 2023. "Pengaruh Lingkungan Kerja Dan Disiplin Kerja Terhadap Kinerja Karyawan Pada Pt. Kiyokuni Indonesia." Parameter 8 (1): 1–12.
- 4) Diana, Yana. 2019. "Pengaruh Beban Kerja Terhadap Kinerja Karyawan Di Housekeeping Departement Pada Hotel Bintan Lagoon Resort." Jurnal Manajemen Tools 11 (2).
- 5) Ernanto, Adella Nanda, And Kustini Kustini. 2022. "Pengaruh Kemampuan Kerja Dan Beban Kerja Terhadap Kinerja Pegawai Pt. Bangtelindo." Jurnal Pendidikan Ekonomi (Jurkami) 7 (2). <https://doi.org/10.31932/jpe.v7i2.1847>.
- 6) Febriana, Arifa, And Kustini Kustini. 2022. "Dampak Kompensasi Dan Beban Kerja Terhadap Loyalitas Karyawan Pada Pt. Berlian Multi Sejahtera." Scientific Journal Of Reflection: Economic, Accounting, Management And Business 5 (3): 656–64.
- 7) Gunawan, Ahmad, Edi Sopandi, Mayylisa Salsabila, Muhammad Idham Pangestu, Rachmah Assifah, Jurusan Manajemen, Fakultas Ekonomi, Dan Bisnis, And Universitas Pelita Bangsa. 2023. "Pengaruh Reward Dan Punishment

Analysis of Workload and Work Discipline on Employee Performance PDAM Tirta Dhaha Kediri City Engineering Division

- Terhadap Kinerja Karyawan Pt. Bintang Toedjoe Cikarang.” *Jurnal Manajemen*. Vol. 11. [Http://jurnal.unpal.ac.id/index.php/jm](http://jurnal.unpal.ac.id/index.php/jm).
- 8) Hardyansyah, Muhammad Ilham, And Kustini Kustini. 2023. “Keterlibatan Disiplin Dan Lingkungan Kerja Terhadap Kinerja Karyawan Melalui Motivasi.” *Jurnal Ilmiah Universitas Batanghari Jambi* 23 (1): 129. [Https://doi.org/10.33087/jiubj.v23i1.3007](https://doi.org/10.33087/jiubj.v23i1.3007).
 - 9) Hermawan, Eric. 2022. “Pengaruh Lingkungan Kerja, Stres Kerja, Dan Beban Kerja Terhadap Kinerja Pt. Sakti Mobile Jakarta.” *Jurnal Kajian Ilmiah* 22 (2): 1410–9794. [Http://ejournal.ubharajaya.ac.id/index.php/jki](http://ejournal.ubharajaya.ac.id/index.php/jki).
 - 10) Himma, Mahmudatul. 2020. “Analisis Pengaruh Faktor Lingkungan Kerja Dan Budaya Organisasi Terhadap Kinerja Karyawan.” *Jurnal Administrasi Dan Bisnis* 14 (2): 130–39.
 - 11) Hustia, Anggreany. 2020. “Pengaruh Motivasi Kerja, Lingkungan Kerja Dan Disiplin Kerja Terhadap Kinerja Karyawan Pada Perusahaan Wfo Masa Pandemi.” *Jurnal Ilmu Manajemen* 10 (1): 81. [Https://doi.org/10.32502/jimn.v10i1.2929](https://doi.org/10.32502/jimn.v10i1.2929).
 - 12) Irawati, Rusda, And Dini Arimbi Carolinna. 2017. “Analisis Pengaruh Beban Kerja Terhadap Kinerja Karyawan Operator Pada Pt Giken Precision Indonesia.” *Inovbiz: Jurnal Inovasi Dan Bisnis* 5 (1): 53–58.
 - 13) Iskandar, Dhany. 2018. “Strategi Peningkatan Kinerja Perusahaan Melalui Pengelolaan Sumber Daya Manusia Dan Kepuasan Kerja Dan Dampaknya Terhadap Produktivitas Karyawan.” *Jibeka* 12 (1): 23–31.
 - 14) Kusuma, Moch Aditya Kusuma, And Kustini Kustini. 2021. “Pengaruh Kepuasan Kerja Dan Lingkungan Kerja Non Fisik Terhadap Disiplin Kerja Serta Dampaknya Terhadap Komitmen Pt. Isoplan.” *Jurnal Ilmu Sosial Dan Pendidikan (Jisip)* 5 (4). [Https://doi.org/10.36312/jisip.v5i4.2394/http](https://doi.org/10.36312/jisip.v5i4.2394/http).
 - 15) Layuk, Agustiani Sambo, Gunawan Gunawan, And Tamsah Hasmin. 2019. “The Effect Of Performance And Workload Allowances On Performance Through Employee Work Motivation In Class Ii-A Sungguminasa Women’s Penitentiary Agustiani Sambo Layuk.” *Yume : Journal Of Management* 2 (1). [Https://journal.stieamkop.ac.id/index.php/yume](https://journal.stieamkop.ac.id/index.php/yume).
 - 16) Lestari, Salsabrina Putri, And Rita Intan Permatasari. 2023. “Pengaruh Pengalaman Kerja Dan Disiplin Kerja Terhadap Prestasi Kerja Karyawan Divisi Operasional Pt. Pegadaian Galeri 24, Jakarta Pusat” 13 (1).
 - 17) Ramadhanty, Ica, Rara Marisdayana, And Renny Listiawaty. 2023. “Perbedaan Tingkat Kelelahan Kerja Dan Beban Kerja Mental Pada Pekerja Mini Market Di Kecamatan Alam Barajo Tahun 2022” 3 (9).
 - 18) Rindorindo, R P, S Murni, And I Trang. 2019. “Pengaruh Beban Kerja, Stres Kerja Dan Kepuasan Kerja Terhadap Kinerja Karyawan Hotel Gran Puri The Effect Of Workload, Job Stress And Job Satisfaction On Employee Perfomance At Gran Puri Hotel.” 5953 *Jurnal Emba* 7 (4): 5953–62.
 - 19) Rusyana, Herdis, Kusuma Agdhi Rahwana, And Barin Barlian. 2023. “Pengaruh Loyalitas Kerja Dan Disiplin Kerja Terhadap Kinerja Karyawan Ichi Bento Di Kota Banjar.” *Jurnal Ekonomi, Manajemen, Pariwisata Dan Perhotelan* 2 (1).
 - 20) Sudrajat, Angga Pramadista. 2022. “Pengaruh Disiplin Kerja Terhadap Kinerja Karyawan Ada.” *Digital Economic, Management And Accounting Knowledge Development* 04 (01): 70–79.
 - 21) Wijaya, Nyoman Surya, And Ni Kadek Bella Milena. 2023. “Pengaruh Kompetensi Dan Komunikasi Terhadap Kinerja Karyawan Di Adiwana Arya Villa.” *Jurnal Inovasi Penelitian* 3 (8): 7429–36.
 - 22) Yuliadi, Kus, And Sutianingsih Sutianingsih. 2022. “Pengaruh Komitmen Organisasi, Motivasi Dan Disiplin Kerja Terhadap Kinerja Pegawai Dinas Kearsipan Dan Perpustakaan Kabupaten Boyolali.” *Jurnal Akuntansi Dan Pajak* 13 (02): 1–17.



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Factors that Influence Consumers in Buying Processed Skipjack Products of the Moengko Marine Light Business



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ABSTRACT: This study aims to determine the factors that influence consumers in choosing to buy processed skipjack business products Cahaya Bahari Moengko. The method used in this research is an interview by interviewing 30 consumers who buy Cahaya Bahari Moengko business products. Sampling was done by purposive sampling method with criteria determined by the researcher. The results showed that of the 30 respondents making purchasing decisions for MSME products, Cahaya Bahari Moengko's business was a product quality factor of 87% and a business location factor of sales activities of 50% while the price factor did not influence respondents in making purchasing decisions for MSME products for Cahaya Bahari Moengko Business.

KEYWORDS: skipjack products, consumers,

INTRODUCTION

Marine and fisheries resources are one of the potential natural resources that are very large and get serious attention in Indonesia. In brief, two-thirds of Indonesia's territory consists of sea, has more than 17,000 islands and 81,000 km of coastline. So far, the fisheries sector is considered to have been tested as a sector that is able to survive in crisis situations, both economic, financial and monetary, and is able to provide important food for the community, a source of income and at the same time absorb a significant amount of labor (Firdaus, 2018).

One type of fish resource that has great potential in Indonesia is from the large pelagic fish group including Tuna, Tongkol and Skipjack. Indonesia plays an important role in Tuna, Tuna and Skipjack fisheries in the world (Firdaus, 2018). Fish processing is very important because fish is a commodity that is not durable or easily spoiled. For this reason, the existence of a fishing industry or MSME that can process fish into a semi-finished product or finished product that is ready for consumption by consumers (Alber Tulak, 2018). UMKM Cahaya Bahari Moengko Business is one of the skipjack fish processing industries fostered by PT Pertamina Fuel Terminal Poso located in Posos Regency, Central Sulawesi Province, Cahaya Bahari Moengko Business processes skipjack into Cakalang Fufu, Cakalang Garo Rica and Cakalang Tore products.

Marketing is an activity to face competition, business development can increase profits by promoting and distributing products effectively. (Marpaung, 2021 in Prabowo, 2021). According to Ekawati (2013: 2-1), consumers are the party that must be given service in order to become loyal consumers of the products offered. Many efforts fail because they ignore the concept of providing services to customers. Purchasing decisions are entirely in the hands of consumers, who are free to choose according to their needs. Consumers are committed to choosing high-quality products at lower prices. Manufacturers really need to understand consumer behavior, because consumers are the target market of a product. This means that products are made according to the wants and needs of consumers. If the product is considered by consumers to satisfy their needs and desires, consumers will buy the product and vice versa if the product is considered impossible to satisfy their needs and desires, consumers do not buy it (Parabowo, 2021).

Research Objectives

To find out the factors that influence consumer behavior towards decisions in buying processed skipjack products from Cahaya Bahari Moengko Business.

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RESEARCH METHODS

Research Type and Design

This research is descriptive quantitative in nature where this research assesses things that exist at the time the research is conducted or real problems and provides a description of the facts that are the object of research coupled with an interpretation of existing facts.

Place and Time of Research

The research location is the scope of the area that is the object of research. This research was conducted at Cahaya Bahari Moengko MSMEs assisted by PT Pertamina Fuel Terminal Poso. This research was conducted from June-July 2023.

Population and Sample

Population is the whole of the object under study. The population in this study are MSMEs Cahaya Bahari Moengko Business which has several processed products from skipjack and consumers who come to consume processed skipjack products at these MSMEs located in moengko village, poso district. Where these MSMEs are included in the research population in which something is attached or contained in the research object.

Samples were taken from consumers who came to buy and consume 3 products of processed skipjack UMKM Cahaya Bahari Moengko Business, namely Cakalang Garo Rica, Cakalang Tore and Cakalang Fufu products. Samples were taken using purposive sampling technique. Purposive sampling is a sampling technique by which the researcher determines the sample with certain considerations.

The respondent sample is determined by the researcher where the sampling is based on specific characteristics that are in accordance with the researcher's objectives, namely anyone who makes a purchase and is not the first purchase made for Cahaya Bahari Moengko Business UMKM products that are encountered by chance by the researcher. A sample of 30 respondents was taken at different times and days.

Data Type and Source

This study uses primary and secondary data types. Primary data is obtained directly from consumers who come to buy and consume products olah cakalan UMKM Cahaya Bahari Moengko Business through an interview process with respondents using a list of questions (questionnaire) as a tool. Secondary data is obtained from literature studies related to research topics sourced from reports, scientific journals, theses, and related agencies relevant to this research that can be accounted for.

Data Collection Technique

The data collection technique in this study was an interview technique using a questionnaire. An interview is a conversation conducted by 2 people, namely the interviewer and the interviewee, which aims to obtain the data needed by the interviewer directly. The interview process is carried out directly to consumers who buy products at MSMEs Cahaya Bahari Moengko Business. A questionnaire is a list containing questions that will be answered by respondents. In this study, the questionnaire was distributed directly to consumers who were met at the Cahaya Bahari Moengko MSME which was the research sample.

Research Variables

The variables in this study are divided into two, namely the dependent variable or dependent variable and the independent variable or independent variable. The dependent variable is the purchase decision and the independent variables are location, quality and price.

Operational Definition of Variables

1. Purchase decision

Kotler and Armstrong (2018, p. 176) purchasing decisions are an unexpected situational factor. Consumers can form purchase intentions based on factors such as expected income, expected price, and expected product benefits. Sudaryono (2014, p. 208) A purchase decision is defined as a selection of actions from two or more alternative choices. In other words, people who make decisions must have one choice from several existing alternatives. If someone is faced with two choices, namely buying and not buying, and then he chooses to buy, then he is in a position to make a purchase decision. Purchasing decisions are a series of processes that start with consumers recognizing their problems, seeking information about certain products or brands and evaluating these products or brands on how well each alternative can solve their problems, which then a series of processes leads to a purchase decision (Tjiptono, 2014: 21). Furthermore, Kotler and Keller (2012: 227) add that, the purchasing decision process is a five-stage process that consumers go through, starting from problem recognition, information search, evaluation of alternatives that can solve their problems, purchase decisions, and post-purchase behavior, which starts long before the actual purchase is made by consumers and has a long impact after that (Sari, 2021)..

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2. Location

Lupiyoadi and Hamdani (2009: 92) location is related to where the company should be headquartered and carry out its operations or activities. Then Kotler (2008: 51) "One of the keys to success is location, location starts with choosing a community". This decision is highly dependent on the potential for economic growth and stability, competition, political climate, etc. The location of the business is the place where the business will be carried out, all activities ranging from procurement of materials to distribution or sales and marketing to consumers or customers. Choosing the right business location will greatly support the development of the business. Factors that generally need to be considered in choosing the location of the company, are: community environment, proximity to the market, availability of labor, proximity to raw materials and suppliers, transportation facilities and costs, other natural resources. In addition to these factors, there are various other factors that need to be considered in site selection: land prices, community dominance, labor laws and relocation regulations, proximity to other factories and warehouses of the company and competitors, tax rates, the need for expansion, weather or climate, security, and the consequences of implementing environmental regulations." (Handoko, 2000) The decision to choose the location of manufacturing businesses and micro/small businesses is influenced by a variety of criteria

3. Quality

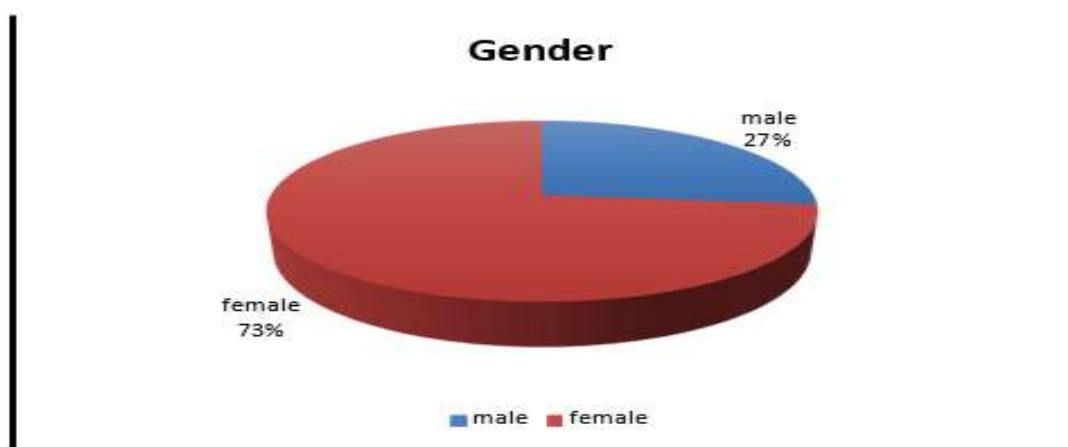
Kotler and Armstrong (2008: 75) say that product quality is a potential strategic weapon to beat competitors. Furthermore, Kotler (2009) is the overall characteristics of a product that affect the ability to satisfy stated / implied needs. Meanwhile, product quality is the ability of the product to carry out its functions which include durability, reliability or progress, strength, ease of packaging and product repair and other characteristics in Luthfia (2012). According to Sudaryono (2016: 86), product quality is defined as the customer's overall evaluation of the goodness of the performance of goods or services. A product is something that can be offered to the market to get attention, to buy, use or consume that can fulfill a desire or need. Products can be physical goods, services, experiences, events, people, places, property, organizations, information and ideas (Kotler and Keller, 2009 in Sari, 2021).

4. price

Kotler and Keller (2007: 77) define price as one element of the marketing mix that generates revenue while the others generate costs. Furthermore, Hasan (2008: 298) argues that price is all forms of monetary costs sacrificed by consumers to obtain, own, utilize a number of combinations of goods and services from a product. According to Suharno and Sutarmo (2010), price is the amount of money used to obtain goods or services. Sumarwan (2011, p. 369) states that price is the product or service attribute most often used by most consumers to evaluate products. So price is the main factor considered in choosing products and services. Kotler and Armstrong (2018, p. 308) state that price is the amount of money charged for a product or service, or the amount of value that customers exchange for the benefits of owning or using a product or service. Tjiptono (2016, p. 219) defines that price is a component that has a direct effect on company profits. The price level set affects the quantity sold. In addition, prices also indirectly affect costs, because the quantity sold affects the costs incurred in relation to production efficiency (Sari, 2021).

RESEARCH RESULTS AND DISCUSSION

A. Gender of Respondents



The results of interviews conducted with 30 respondents obtained data that the number of female respondents was 73% more than male respondents, which was only 27%. This illustrates that consumers of Cahaya Bahari Moengko MSMEs are mostly visited by women.

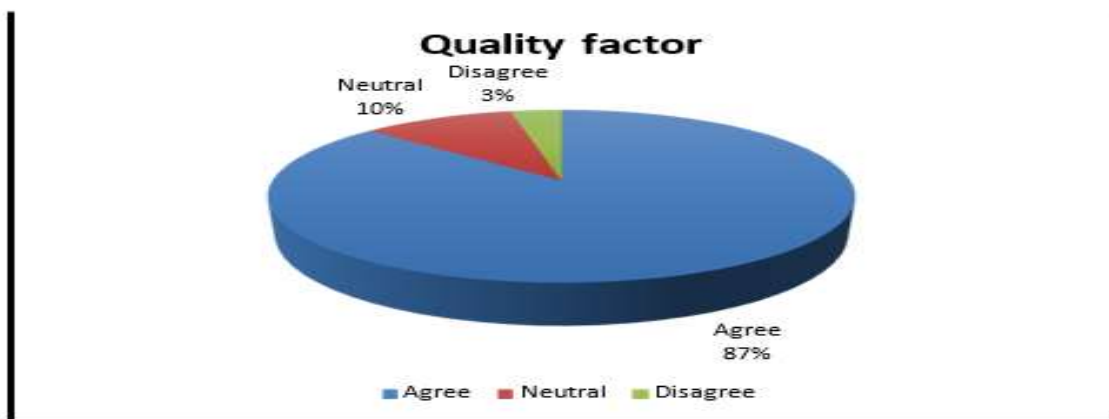
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B. The Influence of Location Factors in Purchasing Decisions



The data above shows that of the 30 respondents, 50% agreed that the location factor influenced the decision to purchase products at MSMEs Cahaya Bahari Moengko Business, 33% of respondents did not agree that the location factor influenced purchasing decisions and the remaining 17% were neutral.

C. The Influence of Quality Factors in Purchasing Decisions



The data above shows that of the 30 respondents 87% agreed that the product quality factor influenced the decision to purchase products at MSMEs Cahaya Bahari Moengko Business, 3% of respondents did not agree that the product quality factor influenced purchasing decisions and the remaining 10% were neutral.

D. The Influence of Price Factors in Purchasing Decisions



The data above shows that of the 30 respondents, 23% agreed that the product price factor influenced the decision to purchase products at Cahaya Cahaya Business UMKM. Bahari Moengko, 17% of respondents disagreed that the price factor influenced purchasing decisions and the remaining 60% were neutral or not affected by price factors in purchasing decisions.

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CONCLUSION

Based on the results of the research conducted, the researcher can draw the conclusion that of the 30 respondents, 73% of the visitors to Cahaya Bahari Moengko MSMEs are women, the factors that most influence 30 respondents to make purchasing decisions for Cahaya Bahari Moengko MSME products are product quality factors as much as 87% and business location factors sales activities as much as 50% while the price factor does not affect respondents in making purchasing decisions for Cahaya Bahari Moengko MSME products.

SUGGESTIONS

The suggestion proposed in this study is that it is advisable for Cahaya Bahari Moengko MSMEs to make packaging variants to accommodate consumers who are visiting for the first time and have not known the product before, besides that there are more product variants with more diverse fish processing to reach consumers who do not like or are allergic to tuna.

REFERENCES

- 1) Firdaus, Maulana. 2018. "Profil Perikanan Tuna Dan Cakalang Di Indonesia". *Buletin Ilmiah MARINA Sosial Ekonomi Kelautan dan Perikanan*, Volume 4 no 1 Hal: 23-32.
- 2) Fidyansari, Dharma & Sri Nur Aini Aprilia. 2018. "Faktor-Faktor Yang Mempengaruhi Perilaku Konsumen Terhadap Keputusan Pembelian Produk Olahan Sagu (Kapurung) Di Kota Palopo". *Jurnal Perbal. Fakultas Pertanian Universitas Cokroaminoto Palopo*, Volume 6 No 3 Hal: 66-75.
- 3) Harahap, Ansari Dedy. 2015. "Analisis Faktor-Faktor Yang Mempengaruhi Keputusan Pembelian Konsumen Di Pajak Usu (Pajus) Medan". *Jurnal Keuangan dan Bisnis*, Volume 7, No 3 Hal: 227-242.
- 4) Sari, Permata Sari. 2021. "Faktor-Faktor Yang Mempengaruhi Keputusan Pembelian, Kualitas Produk, Harga Kompetitif, Lokasi (Literature Review Manajemen Pemasaran)". *Jurnal Ilmu Manajemen Terapan*, Volumen 2 Issue 4.
- 5) Tulak, Alber. 2013. "Pengembangan Strategi Industri Pengolahan Ikan Pt. Palu Jaya Utama Kecamatan Palu Utara Kota Palu Sulawesi Tengah". *e-J Agrotekbis* 1 (2): 159-165.
- 6) Prabowo, Tri. 2021. "Faktor yang Mempengaruhi Perilaku Konsumen Terhadap Keputusan Pembelian Buah di Pasar Induk Cibitung Bekasi". *Jurnal Parameter*, Volume 6, Hal: 169-116.



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Development of Logistics Vietnam Services: Situation and Solutions



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ABSTRACT: Through the method of document research, analysis, and synthesis, the article has reviewed the current situation of logistics services in Vietnam during the period of 2017 to 2022. Accordingly, this service is developing at a relatively high rate but still some limitations such as incomplete legal policies, desynchronized infrastructure or small-scale Vietnamese logistics enterprises, lack of human resources and international operational experience. The article also points out that the cause of the above existence is the lack of an overall development strategy, the lack of inter-sectoral coordination, and Vietnam's current weak logistics human resources. Based on the existence and identified causes, the authors have proposed a number of solutions to remove difficulties for logistics service activities in Vietnam. Completing institutions and policies, developing infrastructure in a synchronous manner and increasing connectivity, improving business capacity and service quality, and training and developing logistics human resources are the solutions that have been proposed given in the article. Through these solutions, the authors hope that Vietnam's logistics service will have a breakthrough development in the future.

KEYWORDS: Solution; Logistics; Develop; Reality; Vietnam

1. INTRODUCTION

Vietnam has many potentials and advantages in developing logistics services. The Vietnamese government have focused on building and developing logistics services on the basis of taking advantage of potentials and advantages and turning logistics services into a spearhead economic sector, making positive contributions to improving productivity overall competitiveness of the economy. The development of logistics services in Vietnam in the period of 2017 - 2022 has achieved results such as a relatively high growth rate of service revenue of 14% - 16%/year, the quality of logistics services is improved. In addition to the achieved results, Vietnam's logistics services at this stage still have shortcomings and limitations such as the development of logistics services is not commensurate with the potential and advantages, the logistics infrastructure is not synchronized. Therefore, the article will analyze the situation of logistics service development in Vietnam in the period of 2017 - 2022, point out the achieved results, shortcomings, limitations and causes, on that basis, propose solutions development of logistics services in Vietnam by 2030.

2. REAL SITUATION OF DEVELOPMENT OF LOGISTICS SERVICES IN VIETNAM IN THE PERIOD OF 2017 – 2022

2.1. Result

Development of logistics services in Vietnam in the period of 2017 - 2022 has achieved the following results:

Firstly, the growth rate of logistics service revenue is quite high. In the period of 2017 - 2022, the growth rate of logistics service revenue is quite high at 14% - 16%/year, with a scale of about 40 - 42 billion USD/year.

Secondly, logistics infrastructure is invested and developed quickly, initially promoting efficiency. Many large and modern works have been put into operation. Related infrastructures such as roads, railways, waterways and airways have had a breakthrough and strong development. The focus on investment in developing transportation infrastructure with focus has contributed to the rational restructuring of the transport sector, ensuring the harmonious connection between modes of transport, and promoting the strengths of each mode., reducing transportation costs, improving efficiency and quality of transportation services, thereby enhancing the competitiveness of the economy.

Third, logistics enterprises increase in number and gradually improve in capacity. The number of logistics enterprises in Vietnam has grown an average of 8.16%/year, from 25,414 enterprises in 2017 to 37,406 enterprises in 2022. Vietnam's logistics performance index increased and reached 3.27 points per year 2018 compared to 2.98 points in 2016. Vietnamese logistics

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enterprises increased to number, gradually improved their capacities and actively participated in supporting production, domestic circulation, import and export of goods. Enterprises participate in many stages in the logistics service chain, gradually moving to the stages with high added value. Have gradually formed a number of large enterprises and corporations in the field of logistics, applying modern technology, capable of competing with foreign enterprises such as Saigon Newport, capable of competing with other enterprises. Foreigners operating in Vietnam.

Fourth, the quality of logistics services is improved. The quality of logistics services of Vietnamese enterprises is increasingly improved. Currently, there are about 5,000 Vietnamese enterprises providing 3PL services. Vietnam has a full range of services in the logistics industry, many of which are developing according to advanced models in the world such as forwarding and delivery services, inland port/inland clearance (ICD) services. These services have applied many advances in science and technology, artificial intelligence (AI), and the management team is increasingly qualified. Some large-scale domestic enterprises have provided logistics services to Southeast Asian countries. Currently, there are quite a few logistics enterprises that are researching markets in Asia and Africa to provide international logistics services.

Fifth, the logistics service market is expanding. Vietnam's logistics service market is increasingly expanding. According to the Agility Ranking 2022, Vietnam's logistics service market is ranked 11th in the group of 50 emerging global logistics service markets. Rankings, scores, international opportunities, and business fundamentals tend to increase between 2017 and 2022 (Table 1).

Table 1. Ranking of Vietnam's Logistics Index in Emerging Markets 2017 - 2022

Year	Ranking	Score	Domestic opportunity	International opportunity	Business fundamentals	Digital transformation readiness*	Ranking in Southeast Asia
2017	19/50	5,33	5,73	5,32	4,87		5
2018	19/50	5,46	5,99	5,38	4,89		5
2019	10/50	5,48	4,88	6,12	5,31		3
2020	11/50	5,52	4,94	6,17	5,37		4
2021	8/50	5,67	5,04	6,41	5,44		3
2022	11/50	5,55	5,02	6,01	5,48	5,75	4

Source: Agility, <https://www.agility.com/>; * Only this criterion will be evaluated in 2022

Vietnam's logistics service industry has shown an important role in promoting production, business, import and export of goods, contributing to the implementation of new-generation free trade agreements (FTAs). The volume of goods transported by modes of transport will grow at an average rate of 8.16%/year in the period 2017 - 2022, from 1,383.2 million tons in 2017 to 2,009.6 million tons in 2022.

2.2. Existence, limitations and causes

In addition to the achieved results, the development of logistics services in Vietnam in the period of 2017 - 2022 still has some shortcomings and limitations as follows:

Firstly, the development of logistics services has not been commensurate with the potential and advantages of the country. Vietnam has potential and advantages in the development of logistics services, in the period of 2017 - 2022, Vietnam's logistics services develop rapidly, but it is still not commensurate with the potential and advantages of the country. Logistics costs are still high, competitiveness is low. Some targets of the Action Plan to improve competitiveness and develop logistics services in Vietnam by 2025 have not been achieved: The proportion of logistics services' contribution to annual GDP is at 4% - 5% GDP (the target in the Plan is 5% - 6% GDP); logistics costs are equivalent to 20.8% of GDP while the world average is 14% (the target is 16% - 20% of GDP). In recent years, Vietnam's logistics service industry seems to have only focused on developing the domestic market, has not developed commensurate with the country's potential advantages, high logistics costs, limited competitiveness, and connection with export industries is not tight...

Second, policies and laws on logistics services have not been completed. The legal framework system, policy documents, and legislation on logistics are many but incomplete. Currently, Decree No. 163/2017/ND-CP dated December 30, 2017 regulating logistics service business is a document that directly regulates conditions for logistics service business, but service businesses Logistics must also comply with the provisions of many other specialized legal documents. These regulations only focus on related aspects such as import and export business, customs warehousing. Some provisions of policies and laws on logistics services are still overlapping, generating many inappropriate administrative procedures and specialized inspections. Although, the governing bodies have issued many documents to guide the remedy, but there has not been an assessment of the implementation of policies

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on management and development of the logistics service industry in an overall way to promptly amend to suit the characteristics of logistics activities in practice.

Third, logistics infrastructure is not synchronized, scattered and lacks connectivity. Vietnam's logistics infrastructure has been significantly improved in the period of 2017 - 2022 from the system of roads, highways, airways, railways, inland waterways, seaports, inland ports, airports logistics centers, warehouses, and yards, but are still incomplete and synchronous, not facilitating logistics activities to reduce circulation costs and develop sustainably. The road system, especially the expressway between localities and the planning of seaports and warehouses, is scattered and lacks connectivity. Our country has about 90 logistics centers but under 10 hectares, with this area just like a "dry port". Therefore, it has hindered the sustainable development of industries and localities, especially the logistics industry. Currently, 90% of exports are by sea, but we only receive 10% of the demand for logistics services, the remaining 90% are due to foreign countries. These are barriers to the development of activities of transporting goods, materials, warehousing, and comprehensive supply chain management in Vietnam today.

Fourth, logistics enterprises are mainly small and medium enterprises, limited in terms of capital, human resources as well as international operation experience. As of 2022, Vietnam has 37,406 enterprises registered to operate in the field of logistics services with industry code 5229. Domestic logistics enterprises account for 89% of the total number of logistics enterprises, but only account for about 30% of the market share. While, foreign-invested logistics enterprises only account for 11% of the total number of logistics enterprises, but with large scale, they account for about 70% of the market share. Vietnam's logistics enterprises are mainly small and medium enterprises (accounting for 95% of the total number of logistics enterprises), limited in terms of capital, human resources as well as international operation experience, there is no link between the stages in logistics supply chain and between logistics enterprises and import and export enterprises, so the competitiveness is weak, most of them work in small supply chains, lack professionalism, service costs are still high, the quality of providing some services is still low service is not high... In fact, Vietnamese logistics enterprises are only hired to transport to domestic ports by customers, after the port is decided by foreign enterprises. Therefore, in both buying and selling dimensions, domestic logistics enterprises are limited in terms of "playing ground".

Fifth, the logistics services market lacks transparency. The logistics services market lacks transparency, unfair competition, and has not brought into full play its internal resources and advantages for sustainable development. Logistics costs are high, economic linkages between localities and territories are still not tight... Logistics activities of goods transported and transported by road still account for a very large proportion (about 70%). While other modes such as railway, sea and waterway, the proportion is still small.

The above shortcomings and limitations stem from the following main reasons:

The logistics services industry still does not have an overall strategy for developing logistics services.

The inter-sectoral coordination mechanism in the field of logistics services is sometimes not effective and synchronous.

The implementation and coordination of national logistics service development tasks still face many difficulties due to the characteristics of the logistics industry, which includes many fields under the management of many different ministries and branches.

The coordination in research and implementation of planning by ministries, branches and localities has not really brought into play its effectiveness and efficiency. Most of the strategies and master plans for the development of logistics services of the Government just stop at the strategic level, long-term vision, no detailed planning for logistics services.

The ability of localities to coordinate in performing tasks in Decision No. 200/QĐ-TTg dated February 14, 2017 on approving the Action Plan to improve competitiveness and develop logistics services in Vietnam to 2025 and the coordination between localities and logistics enterprises is still limited.

Limitations in business size and ability to call and mobilize capital, experience and management qualifications, ability to apply information technology as well as human resource qualifications that have not yet met the requirements of international operations and another important reason is that there is no source of goods because Vietnam mainly exports FOB and imports CIF.

Currently, Vietnam's logistics human resources are still lacking and weak, not meeting the requirements, especially there is a lack of good logistics specialists capable of applying and deploying at enterprises. Human resources are lacking in quantity, weak in qualifications, lack of experience and professionalism. Professionally trained experts in this field are too few compared to the development requirements of the logistics service industry. Currently, only about 30% of human resources in logistics are trained in logistics, the rest are self-taught right in the working process.

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3. RESEARCH METHODS

The article uses two research methods: data collection method and meta-analysis method. With the data collection method, the research team searched for documents in the form of articles and reports on the topic of logistics services in Vietnam. After excluding documents of unknown origin and controversial information published in the study, the documents that met the requirements were retained and included in the analysis in the article. From the appropriate documents, the authors have compiled the necessary information to clarify the current situation of Vietnam's logistics service development in the period of 2017 - 2022 and the limitations that still exist in this service. Next, the research team uses the method of analysis and synthesis to divide the information and results collected from documents on logistics services into specific groups and sets. Based on that, the authors identify the causes of existence, limitations and provide key solutions to develop logistics services in Vietnam by 2030.

4. SOME KEY SOLUTIONS TO DEVELOP LOGISTICS SERVICES IN VIETNAM BY 2030

In the period to 2030, the global economy and trade tend to recover in the context of great and unpredictable changes in the world, strategic competition between major countries, protectionist trends, and trade conflicts continue to increase; The fourth industrial revolution took place strongly, changing production structure, transportation methods, upgrading technology in the field of logistics; Digital transformation (digitization) of the supply chain is the application of technology solutions to optimize the supply process, making this process faster, proactive and responding to a larger transaction volume; The logistics service industry has received more and more attention from the Party, State, Government, ministries, branches, localities, associations, enterprises, and training institutions; Vietnam integrates more deeply into the regional and world economy, besides having to fulfill commitments to open the market, opening up many opportunities to develop trade and logistics services... International context and in the country with many opportunities and challenges intertwined that will affect the development of logistics services in Vietnam in the coming years.

4.1. Improve institutions and policies on logistics services

Promote administrative reform, improve business investment environment, create a competitive environment; accelerate reform of customs procedures, reduce and simplify specialized inspection procedures, standardize dossiers, implement commitments in the Agreement on Trade Facilitation of the World Trade Organization (WTO). ; increase the index of "Cross-Border Trade Transactions" of Vietnam, minimizing administrative procedures related to logistics activities.

Reviewing policy and legal documents related to logistics services, amending and promulgating new policies and laws governing logistics services in general and each specific industry (transportation, warehousing, forwarding and forwarding) , inspection ...), internalizing international commitments on logistics services, creating a favorable legal basis for logistics activities.

Review of international commitments on logistics services at WTO, Association of Southeast Asian Nations (ASEAN) and FTAs. Proposing measures to ensure compatibility in logistics commitments at international forums, between international commitments on logistics and domestic laws.

Adjusting and supplementing policies and laws on logistics services to facilitate the development of logistics service activities as well as domestic logistics enterprises.

To amend and supplement policies to support logistics enterprises, especially small and medium enterprises, to facilitate access to domestic and foreign capital sources, market development, training and access to information.

Completing financial mechanisms and policies, including mechanisms and policies on taxes, capital sources, interest rates, etc., to meet the needs of logistics service development. Create favorable conditions for logistics enterprises, especially small and medium enterprises, more convenient in accessing domestic and foreign capital sources.

It is necessary to have policies to encourage and promote enterprises towards green logistics development, especially small and medium enterprises; have a tax and fee mechanism to create incentives and reduce costs for businesses; encourage the use of alternative energy sources in road transport, encourage the change of modes of transport.

4.2. Developing logistics infrastructure in the direction of synchronization and increasing connectivity

Develop a master plan on infrastructure development of Vietnam's logistics industry in the period up to 2030, with a vision to 2045; to elaborate detailed plans on the establishment and modernization of national and international transport corridors; planning the system of seaports, inland ports, airports, railways and roads synchronously; planning synchronous logistics centers, associated with the general planning, with the development goals of the local, regional, regional and national...

Developing synchronous and modern logistics infrastructure, including transport infrastructure, technology infrastructure and connection infrastructure: Developing transport infrastructure including roads, railways, and inland waterways , sea and air routes along with a system of auxiliary works such as railway stations, airports, seaports, warehouses...; develop technology

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infrastructure including information technology, digital platforms...; developing connection infrastructure including logistics centers and large-scale, modern and environmentally friendly inland ports/ICDs.

Building and completing logistics infrastructure for agriculture. Deploying to build a system of warehouses and logistics centers serving agriculture in large-scale agricultural commodity production areas and connecting from these regions to logistics centers and seaports, airports and border gates.

Investing in the development of synchronous transport infrastructure, ensuring connectivity and facilitating the development of logistics services; develop seaport infrastructure, including wharves and navigational channels of national seaports in accordance with seaport development planning; invest in building roads connecting to seaports, creating favorable conditions for port operations and logistics services; develop a road system connected with economic corridors and belts in accordance with the approved development planning.

Focus on technology development, innovation in the field of logistics services; accelerating the digital transformation process, applying information technology to change stagnation, create breakthroughs, improve competitiveness, and reduce costs.

Establishing a network of modern multi-level logistics centers and connecting transport routes with major cities and key economic regions in the country; improve the operational efficiency of logistics centers.

There should be policies to attract investment in the development of logistics centers through tax incentives, loan guarantees, credit insurance, low-interest financing, etc. In addition, the Government needs to improve the main system policies and mechanisms for attracting investment and doing business in exploiting and using seaports in line with the integration process and international practices.

4.3. Improve business capacity and service quality

To promulgate policies to support logistics enterprises, especially small and medium enterprises, to facilitate access to domestic and foreign capital sources, market development, training and access to information; Support start-up for logistics service businesses and enterprises to research and develop technology applied for logistics activities.

Prioritize budget allocation to support research, application, technology transfer and technical progress for logistics service development, and socialization of resources for logistics service development. Research and application of new technologies, technical advances in management, operation, training in supply chain and logistics services.

It is necessary to have mechanisms and policies to encourage and create favorable conditions for logistics enterprises and shipping enterprises to proactively enter into joint ventures and associate with railway, inland waterway and road transport enterprises to provide transport services multimodal transport services, as well as package logistics services.

Support the logistics service industry with capital to develop technology and digital transformation within the framework of the National Action Program on logistics. Currently, logistics enterprises in the new context need to have the ability to manage international goods flows and to be able to compete, they need to soon deploy high-tech comparison systems to better participate in the forwarding platform. Global transportation is in operation.

Developing strong 3PL, 4PL and 5PL logistics enterprises to be the locomotive for logistics enterprises in the industry, improving added value for the supply chain. Accelerating the application of technology, digital transformation, improving the quality of human resources and expanding international cooperation will help 3PL logistics enterprises strengthen and form 4PL logistics enterprises, even small and large enterprises. In the medium term, 4PL logistics enterprises that strengthen together with e-commerce platforms will form 5PL logistics enterprises.

4.4. Developing the logistics service market

Developing logistics enterprises in both quantity and size, focusing on developing 3PL, 4PL, 5PL enterprises and improving logistics service supply capacity to create logistics service supply for the market.

Develop production, import and export enterprises and promote trade, import and export of goods to increase demand for logistics service market.

Promote the development of outsourcing logistics services: Promote propaganda for manufacturing, import-export and domestic trading enterprises about the use of outsourced logistics services in the direction of specialization and reasonable division of labor. in the supply chain.

Developing strong logistics groups / leading enterprises, promoting overseas investment and exporting logistics services, creating orientation and driving force for market development; Form a network of large-scale logistics enterprises in Vietnam, capable of leading the market.

Implement the connection of logistics service chains to gradually meet the needs of the market, improve the efficiency of logistics service business; Mobilize social resources, including financial resources, to develop logistics service supply chains.

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Review and finalize policies and regulations on transit and transshipment of foreign goods through Vietnam. Review and finalize policies and regulations on transit and transshipment of foreign goods through Vietnam in a way that is open, convenient and consistent with Vietnam's international commitments to exploit its geographical advantages in logistics service provision.

Developing the Vietnamese logistics service market in a competitive and transparent manner so that enterprises using logistics services can really enjoy quality logistics services at reasonable prices, forming a system of discounts and flowers reasonable remuneration in accordance with the forms of supply. Thereby creating the custom of outsourcing logistics services, supporting production, import and export enterprises to focus on performing basic and core functions, contributing to improving management efficiency and production and business efficiency business in the context of deepening integration into the regional and world economy.

Promote trade promotion for development of logistics services: Host and organize international logistics seminars, forums, fairs and exhibitions; organize research groups to go abroad and invite foreign business delegations to Vietnam to exchange investment opportunities and cooperation in the development of logistics services; supporting enterprises to open representative offices, invest abroad in the field of providing logistics services.

Expanding international cooperation in logistics services: Strengthening links with logistics associations and enterprises in ASEAN and in the world; attracting foreign logistics enterprises to invest and cooperate with Vietnamese logistics enterprises.

4.5. Training and developing logistics human resources

Develop a strategy for training and developing logistics human resources in the period to 2030, with a vision to 2045.

Promulgating and implementing policies to develop logistics human resources to meet the needs of logistics service supply chain development. Developing logistics human resources is not only good at professional skills and foreign languages, but also able to update new technologies and have good situational handling skills. Take advantage of external resources to develop logistics human resources.

Forecasting human resource demand in the logistics service industry, proposing support policies, prioritizing the development of high-quality human resources.

Improve the quality of logistics human resources through training human resources for the logistics service industry in a methodical and intensive way to build a team of logistics human resources with professional manners, professional knowledge, foreign languages, well apply information technology, understand the legal system and practices of the host country, understand international law and have wide relationships in the world.

Promote the training of logistics human resources at all levels, especially the training of high-quality human resources, equipped with the necessary knowledge and skills to meet the requirements of the domestic and foreign logistics market facing challenges from the Fourth Industrial Revolution - this is a key factor to improve competitiveness and quality of logistics services.

Improve the efficiency of logistics human resource training; focus on training logistics human resources for both state management agencies and enterprises to meet the fast development needs of the industry; basic training in logistics for state managers and business managers to be able to perform well the state management of logistics and management and development of logistics enterprises.

Develop and implement human resource training programs for the logistics service industry, especially high-quality human resources, industry experts with skills in applying and implementing logistics and supply chain management practices keep pace with industrialized countries.

Diversify logistics training forms such as online training, classroom training combined with practical training, on-the-job training at enterprises. Promote joint training, credit recognition, international diploma training in logistics. Support investment in infrastructure for training of the logistics service industry (logistics simulation room, information technology application center to handle and coordinate logistics activities...).

5. CONCLUSION

Vietnam logistics services in the period 2017 - 2022 have developed quite rapidly, achieving results such as the growth rate of logistics service revenue is quite high, the quality of logistics services has been improved, the logistics service market has been expanded. ... In addition to the achieved results, the development of logistics services in Vietnam in this period still has some shortcomings and limitations such as the development of logistics services is not commensurate with the potential and advantages of the country, policies and legislation. The law on logistics services has not been completed, the logistics infrastructure is not synchronized, it is scattered and lacks connectivity. In the period to 2030, the international and domestic context will create many opportunities and challenges for the development of logistics services in Vietnam. To develop logistics services in Vietnam by 2030, it is necessary to implement a number of solutions such as perfecting institutions and policies on logistics services,

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developing logistics infrastructure in a synchronous manner and increasing connectivity, improving business capacity and service quality.

REFERENCES

- 1) Tran Thi Ngoc Anh (2021), "Solutions to develop logistics service industry in Vietnam today", *Economy and Forecast Review*, No. 11, 2021, pp.52 - 54.
- 2) Ministry of Industry and Trade (2022), Vietnam Logistics Forum 2022 Document, <https://vlf.logistics.gov.vn/>.
- 3) Agency of Foreign Trade (2022), Report on the implementation of Decision No. 200/QD-TTg dated February 14, 2017 of the Prime Minister approving the Action Plan to improve competitiveness and development logistics services to 2025, Report dated 24/11/2022, <https://vlf.logistics.gov.vn/>.
- 4) Tran Thanh Hai (2022), "5 year logistics action plan - Looking back and next step", Vietnam Logistics Forum 2022 Document, <https://vlf.logistics.gov.vn/>.
- 5) Nguyen Van Hoi (Director), Vietnam logistics development strategy to 2030, vision 2045, Viet Nam Institute of Strategic and Policy for Industry and Trade, Hanoi - 2023.
- 6) Nguyen Van Hoi, Phung Thi Van Kieu and Ha Ngoc Thanh (2023), "Solutions for the development of Vietnam's logistics until 2030, *Industry and Trade Research Review*, No. 82 (February 2023).
- 7) Industry and Trade Publishing House (2022), Vietnam logistics report 2022 "Green Logistics", Hanoi - 2022.
- 8) Vu Phuong Nhi (2022), "Developing logistics into a service industry with high added value", <https://xaydungchinh sach.chinhphu.vn/>, posted on December 16, 2022.



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Return on Invested Capital, Return on Investment, a Measure of the Profitability of Invested Capital, Research Evidence at Song Hong Garment Joint Stock Company



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ABSTRACT: The objective of the article is to clarify investment activities, return on investment, return on invested capital, and Return on Investment's effectiveness in measuring the profitability of invested capital. To accomplish the stated research objectives, the authors have used the method of document research to build a research theoretical basis for the article. Next, the methodology and meta-analysis method was used to analyze the secondary data collected from the financial statements of Song Hong garment joint stock company. The results of analysis and data calculation at selected enterprises for empirical research have shown that Return on Investment can be calculated through Return on invested capital. From the results and comparative analysis of Return on invested capital, the Return on Investment indicator will also have a positive sign. This has confirmed the investment performance of Song Hong garment joint stock company and shows the effectiveness of Return on Investment in measuring the profitability of the invested capital. However, the authors also think that Return on Investment or Return on invested capital are also relative and they are not the only decisive indicators. Therefore, to make investment decisions, it is necessary to use many indicators to evaluate.

KEYWORDS: Investment; Measurement; Return on invested capital; Return on Investment; Performance

1. INTRODUCTION

The purpose of Investment activities is to bring benefits and the Return on Investment criterion will evaluate whether this investment activity is effective or not. Investment activities play an important role in production and business activities and in socio-economic development. For businesses, investment helps maintain and develop production and business scale to increase products and earn greater profits. For the economy, investment not only helps investors and businesses gain benefits, but through their investment will indirectly promote the development of the economy. Thus, we see that investment activities have a great role and meaning. However, not all investment activities will bring benefits or make the economy grow. In determining which investment activities will be effective in the future, people often rely on Return on Investment (ROI) to determine. The higher the ROI and positive sign, the more investment is worth paying attention to and making. On the contrary, if the ROI is smaller or negative, it represents that the investment is inefficient and can cause loss for the investor. However, calculating ROI in enterprises' production and business investment activities is difficult, so we can use Return on invested capital (ROIC) to calculate ROI. ROIC is a useful metric used as a tool to measure how efficiently a business is using and allocating capital. At the same time, it reflects the efficiency in the coordination activities of the business management team. The research objective of this article is to elucidate the role of investment. Relationship between ROIC and ROI. Return on invested capital and the effectiveness of ROI in measuring return on investment.

2. LITERATURE REVIEW

2.1. Invest

In the document Measuring Investment Performance, author Feibel (2003) argues that Investing is giving up something that we value at the beginning in exchange for more benefits from those things spent. The difference between what is spent and what is desired is called profit. Therefore, investment aims to bring profit (p.4). Author Mieilă (2009) said that if a company wants to ensure its long-term continuous development, it is indispensable for investment activities. Investments are made over a long period of time. An investment is a resource that can be money or other valuable assets that are used to obtain a future benefit

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(p.9). According to Luenberger (1998), the traditional definition of Investment is "the commitment of resources to achieve future benefits". If the investment is geared towards money-related items, the goal of the investment is to promise to receive more money for the money spent in the future. In a broader sense, investment is "the adjustment of spending patterns and receiving resources to optimize the desired patterns of these flows". The determination of income and expenditure in money, a net amount received after a period of time is called "amount" and continues for a long time called "cash flow". The application of scientific tools to investment calculations is called "Investment Science" (pp.1-2). Kevin's Investment document (2008, 2nd ed.) has specified investment as a function of economics. This function is called a function of income and interest is defined by the formula $I = f(Y, r)$. The author also said that when interest rates are high, investment activities can be reduced due to large borrowing costs, and vice versa, when interest rates are low, income can be increased by borrowing money to invest. This also applies to existing funds in corporate funds because the interest rate is the opportunity cost of investing this money. If not, the business will use that money to earn interest. Thus, investments in economics and finance are different. In finance, investment is the use of resources in money or valuable assets to put into a certain business, production, or financial activity over a long period of time in order to obtain greater benefits. The investment may be analyzed specifically, or it is not possible to accurately analyze the potential for benefits because investing in finance always involves risks. The types of financial risks can be mentioned such as risk due to inflation, risk of decrease in value of investment assets (real estate, stocks, shares ...). In economics, investment represents saving and limiting consumption. Investment in economics also involves many areas such as business investment, household investment, or government spending.

2.2. The role of investment in financial activities

According to Adam (2023), investing in finance usually does not include depositing money at banks or similar institutions. The purpose of financial investment is to generate income from investment property. Income includes profit or loss on the sale of real estate or investments, appreciation (or depreciation) of unrealized capital, capital gains such as dividends, interest, rental income, or a combination of capital gains and earnings. Income may also include gains or losses due to exchange rate fluctuations. As we discussed in the section on investment theory. Investment is a way to help businesses grow in the medium and long term. Thus, investment has a very important position and role for investors and the economy.

For investors

In the group of production and business industries, investment is the main activity, deciding the development and growth ability of enterprises. Investment activities help investors and businesses increase resources, expand production and business, technical infrastructure, and production scale, change production technology and create a foundation for production and business. The result of investment activities is an increase in assets and interests in production and business, thereby expanding the scale of production and business, and expanding the market. The implementation of investment activities in research, improving product quality as well as helping investors create new products, meet the needs and tastes of consumers, improve competitiveness in the world market. In investment activities, enterprises invest long-term capital in order to form and supplement necessary assets to realize business goals. This activity is carried out centrally through the implementation of investment projects. According to Farris et al. (2010), more and more senior business managers find ROI to be useful to them. According to Phillips et al. (2020), in order for the ROI data to meet the requirements of reliability, when calculating the ROI, it is necessary to remove the influencing factors, that potentially cause errors for the ROI (p.178). Thus, it can be said that investment activities are one of the decisions of strategic significance for enterprises. This is a long-term financing decision that has a great impact on the business performance of the enterprise. Risks due to mistakes in investment capital estimation can lead to large capital waste, even serious consequences for businesses. Therefore, investment activities play a very important role in the formation and development of enterprises. It requires investment decisions to be calculated and carefully considered.

For economy

For an economy, investment is especially important. Investment not only plays a role in the process of social reproduction but also creates the foundation for the development of the economy. An economy that attracts investment from domestic and foreign entities will make the economy grow more and more. Any investment activity is carried out by individuals or organizations that are private entities or by the State, the benefits that investment activities bring do not stop at the benefits for the investors themselves, but also for the economy as a whole. Investment is an activity aimed at creating new assets for the economy, increasing production and business potential and other social activities. Investment is also an activity that creates jobs for workers, improves the lives of people in society, and develops production. It can be said that investment is the core and driving force for the growth and development of the economy. In addition, investment also contributes to improving the country's science and technology level. Investment activities from abroad, especially from countries with developed economies, will help countries

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accessing investment have the opportunity to access modern technologies, advanced production lines, and promote scientific research activities. Therefore, underdeveloped or developing countries often have policies to attract foreign investment activities from developed countries to take advantage of scientific and technological advantages. Scientific and technological achievements from developed countries will help the economies of these countries grow. The process of industrialization and modernization of these countries depends heavily on investment in science and technology. Thus, investment plays an important role in economic development. Especially with an economy in the middle group like Vietnam, investment activities and investment attraction will determine the ability to bring the economy into integration with the world economy.

2.3. Profit rate

In the study of Gordon & Iyengar (1996) on return on investment and expenditure of corporate capital. The two authors argue that ROI in any form of investment carries the concept of "performance". For investors and business management, their ultimate goal is to drive the highest ROI. ROI shows the company's ability to effectively use capital by generating profits from the use of invested capital. The success of investment activities is reflected in the "loss" or "gain" figures in each financial period. Therefore, we can rely on the results of the ROI over the years to evaluate whether any investment activity has a positive effect (p.306). In addition, investors or businesses can use the ROI data from the results of investment, production and business activities, and certain financial activities to decide whether the ROI of the projects. whether the investment is worth the investment and whether the return on that investment will offset the opportunity cost (Gordon & Iyengar, 1996, p.305). According to Pearce (2016), use ROI for the purpose of measuring the rate of return on investment and deciding whether to invest or not at the calculated ROI. In addition, ROI is also used to evaluate and compare different investments. Investments with a low ROI are discarded and those with higher ROI are taken into account after accounting for possible risks such as inflation due to the long time of the investment (pp.192–195). Thus, ROI is the ratio between net income (usually calculated in a financial period) with investment costs incurred at the time of investment by the Investor. High ROI means that the project is highly efficient, reaps many benefits, and the investment costs are recouped. This index as an investment performance measure, ROI is used to compare and evaluate the performance of different investments. Comparing and contrasting ROI before making an investment will help investors eliminate some of the risks to their investment.

2.4. How to measure Return on Investment

According to Zamfir et al. (2016), ROI is the ultimate metric to help the responsible person answer the question: "Is there a financial return to investing in a performance-improving program, process, initiative, or solution? " ROI is an economic indicator, so to calculate ROI we will rely on mathematical methods. The authors suggest that the income-to-investment comparison has been used to measure the success of an investment opportunity in business many years ago (pp.305-325). As such, ROI is calculated through the ratio between the operating profit earned after the investment action and the total amount of the investment (or the total cost of the investment). However, in Phillips' (1994) study, understanding and calculating ROI is still a challenge even though he considers that much attention has been paid to this indicator (p.3). But we also know that ROI is the answer to ROIC based on all the activities a company does to generate revenue. And ROI is usually focused on a single activity of this company. In this study, we will calculate ROI through ROIC. According to Fernandes (2014), ROIC, also known as Return on Capital, is a measure of profitability and the ability to create value for a business. This indicator shows the efficiency in the use of capital by corporate management (p.36). The formula for determining ROIC is as follows:

$$\text{ROIC} = \text{NOPAT} / [\text{Equity} + (\text{Debt-Cash and cash equivalents})]$$

In there:

NOPAT: operating profit of the business less income taxes.

$$\text{NOPAT} = \text{EBIT} (1-t)$$

EBIT: profit before interest and taxes

t: Corporate income tax

3. RESEARCH METHODS

By collecting data, we search for theoretical documents such as reports, research articles, books on Investment content, the role of investment for investors and the economy, ROI, ROIC, and the calculation of this indicator. The documents on the company's financial statements are compiled by us from 2017 to 2022 on the enterprise's website. Summarizing the collected information, we have built a research theoretical basis for the article. In the empirical analysis, we have used two research methods: methodological, analytical and synthesis. By methodology, we have demonstrated the meaning and importance of investment to the economy, businesses and investors. Next, we use the method of analysis and synthesis to calculate the financial indicators

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based on the financial statements of the enterprise. These financial metrics are incorporated into the formula and the ROI and opportunity cost of the investment are calculated. After having these data, we conducted a comparison and analysis to come to the final conclusion for the research problem.

4. EXPERIMENTAL RESEARCH RESULTS

To examine the effectiveness of measuring the profitability of the investment capital through the ROIC index, the authors conduct an empirical study at Song Hong garment joint stock company. Song Hong garment joint stock company is one of the leading garment and bedding manufacturers in Vietnam. The enterprise has a production scale of 20 production workshops and has the advantage of geographical location near the airport, seaport, quality trained human resources with competitive cost, and the management apparatus is Vietnamese. Male. Combined with the recruitment of leading international experts, the company has become a reliable partner of many famous fashion brands around the world.

Unit: billion

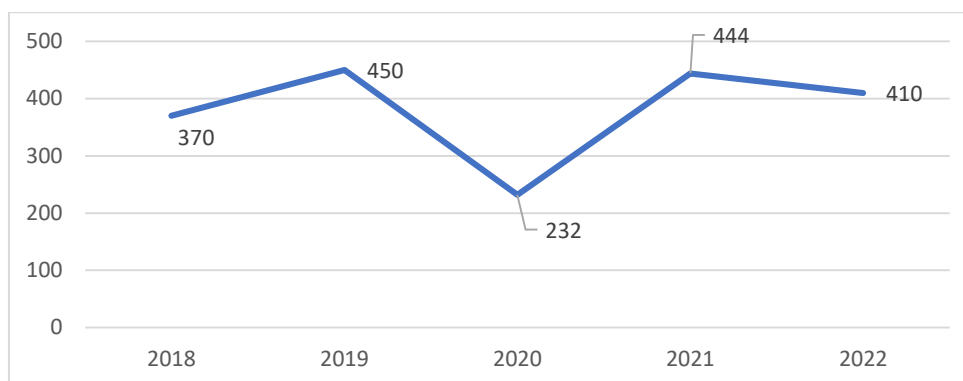


Figure 1. Business results of Song hong garment joint stock company
Source: Author's calculation based on the company's financial statements

Figure 1 shows the profit after tax of Song Hong garment joint stock company for the period 2018 to 2022. Before the impact of the covid-19 pandemic, Song Hong garment joint stock company was also strongly impacted and reduced profits. In 2020 from VND 405 billion in 2019 to VND 232 billion in 2020. Although there has been a recovery in 2021 and 2022, the business is stopping to expand investment and production. Assessing the reason for the decrease in investment, our team believes that it is due to the recessionary influence of the world economy after the pandemic. The economy of many countries recovered slowly, including Vietnam. Combined with that, interest rates from the second half of 2022 and the first five months of 2023 have always remained high. Therefore, businesses believe that investment at this time should be very cautious. In addition to having to spend opportunity costs to invest, businesses are also likely to face a sharp decrease in the number of orders from major partners in the world. Although the business has not expanded its investment, Song Hong garment joint stock Company is still one of the businesses that are assessed to have strong revenue loss with investors and shareholders. To accurately evaluate return on capital, we calculate empirically using ROIC instead of ROI. At the same time, in order to consider the effectiveness of this index in assessing the profit rate of the enterprise, our team also calculates the opportunity costs of the enterprise's expansion investment at the same time Song Hong garment joint stock Company from 2018 to 2022. After having the results of both the ROIC and the opportunity cost results, we will evaluate the effectiveness of measuring the return on investment in terms of ROI.

4.1. Return on invested capital

Based on the formula to determine ROIC presented in the theoretical basis and financial statements of Song hong garment joint stock company from 2018 to 2022, we calculate and include the necessary data in Table 1.

Table 1. Some financial indicators of Song hong garment joint stock company Unit: billion

Year	2018	2019	2020	2021	2022
EBIT	484	570	298	553	473
Profit before tax	450	547	283	543	439
Interest expenses	34	23	15	10	34
NOPAT	387	456	238	442	378
Equity	934	1,236	1,442	1,424	1,646

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In debt	1,587	1,330	1,369	1,479	1,172
Cash and cash equivalents	197	238	136	326	359
ROIC %	16.7	19.6	8.9	17.2	15.4

Source: Calculation based on the report of Song Hong garment joint stock Company

From the Table 1 data we can see that Song Hong garment joint stock Company is a sustainable development enterprise. Equity increased continuously from VND 934 billion in 2018 to nearly 200% in 2022 at VND 1,646 billion. Many financial indicators of the company have been adjusted by management to match the characteristics of the company's main product, which is garment products. These products require a high inventory turnover so that stock does not become stagnant. Therefore, the Account Payable Turnover Ratio also needs to be high to meet the production and payment processes of the business. The cash and cash equivalents figure of the enterprise show the ability to quickly pay the payables. This metric shows that the credit rating of the business is very good. From the ROIC data in Table 1 and the total capital data, we calculate the actual profitability of this business to be VND 2,089 billion in 5 years. The data are presented in Table 2.

Table 2. Return on invested capital Unit: billion

Year	2018	2019	2020	2021	2022
Capital	2,521	2,566	2,628	2,903	2,819
Growth	140	45	62	275	(84)
Capital growth rate (%)	5.9	1.8	2.4	10.5	(2.9)
Return on ROIC	420	503	234	498	434

Source: Calculation based on the report of Song Hong garment joint stock Company

4.2. Opportunity cost of investing

To calculate the opportunity cost of a business's investment we use the Time of Money formula for irregular cash flows. Accordingly, the investment amount is the total capital of the enterprise and the growth capital amount of each year, from 2018 to the future value of 2022. The formula and calculation data are as follows.

$$FV_m = PV (1+r)^m$$

In there:

FV_m is the future value

PV: is the present value

r: Current interest rate

m: is the number of years

Table 3: Opportunity Cost of Investments Unit: billion

Year	2018	2019	2020	2021	2022
Profit after tax	370	450	232	444	410
PV	2,381	45	62	275	2,819
m	4	3	2	1	1
r (%)	9	5.4	6	5.6	6.3
FV	3,361	55	74	397	183

Source: Calculation based on the report of Song hong garment joint stock company

The capital used to calculate opportunity cost can be understood specifically as follows: In 2018, the amount of capital to continue to invest in the capital determined at the end of 2017 and this amount is 2,381 billion VND. This amount is calculated to the future value until 2021. Then, in subsequent years, we will calculate only the difference of the capital increase to the future value in 2021. Finally, in the year In 2022, the investment amount is reduced by VND 84 billion, so the opportunity cost amount in 2022 based on the total capital of the business is 2,819. Applying the calculation formula, we see the amount of money collected in the future, if the enterprise does not make the investment is 1,549 billion dong. Or we can understand this amount as savings interest when not doing investment, production and business.

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4.3. Discuss

After two calculations on ROIC and opportunity cost, we see that investment activities have brought a difference of more than 540 billion VND (ROIC = 2,089 billion > 1,549 billion interest rates calculated on the time value of cash flows. irregular) for businesses. Next, we consider the profit after tax of the enterprise (presented in Table 3). The total profit after tax of the enterprise in 5 years reached 1906 billion VND, smaller than the calculated ROI. Thus, the ROIC index includes the inflation factor. From the results and comparative analysis of ROIC, the ROI Indicator will also have a positive sign. This has confirmed the investment performance of Song Hong garment joint stock Company. This criterion most clearly shows the profit achieved per 1 dollar of capital spent. However, the ROI index also has some limitations such as ROI only works well when evaluating short-term projects, is not suitable for evaluating long-term projects, ROI is also relative and ROI is not an index sole decision. Therefore, to make investment decisions, it is necessary to use many indicators to evaluate.

5. CONCLUSION

In this article, we have accomplished the research objective set out in the first part of the article. In addition to presenting the theory of investment and the rate of return on investment, we also provide a way to determine the ROI through the ROIC indicator. Through analysis, we can confirm that Investment is an activity aimed at bringing profits to the business. Investing is not only profitable, but it also keeps the business growing in the long run. The investment decision is an important one. To make investment decisions, businesses and investors always consider and calculate risk factors. The article also evaluates that ROI is an effective measure of profitability by assessing profitability on invested capital. This result is given by us after comparing with the opportunity cost of not making investment activities of enterprises.

REFERENCES

- 1) Adam, H. (2023), *Investment Basics Explained With Types to Invest*. Accessed May 14, 2023 from <https://www.investopedia.com/terms/i/investment.asp>
- 2) Farris, Paul W.; Neil T. Bendle; Phillip E. Pfeifer; David J. Reibstein (2010). *Marketing Metrics: The Definitive Guide to Measuring Marketing Performance*. Upper Saddle River, New Jersey: Pearson Education, Inc. ISBN 0137058292. The Marketing Accountability Standards Board (MASB) endorses the definitions, purposes, and constructs of classes of measures that appear in Marketing Metrics as part of its ongoing Common Language in Marketing Project.
- 3) Feibel, BJ (2003). *Measure investment performance*. John Wiley & Sons.
- 4) Fernandes, N. (2014). *Finance for Executives: A Practical Guide for Managers*. NPV Publisher, 2014, p. 36.
- 5) Gordon, LA, & Iyengar, RJ (1996). Return on investment and corporate capital expenditure: empirical evidence. *Journal of Accounting and Public Policy*, 15 (4), 305-325.
- 6) Kevin A. Hassett (2008, 2nd ed.). "Investment," *The Concise Encyclopedia of Economics*. Library of Economics and Liberty.
- 7) Luenberger, DG (1998). *Investment Science*. Oxford University Press. pp. 1–2. ISBN 978-0195108095.
- 8) Mieiă, M. (2009) *Managementul investițiilor*, București: Ed. Cartea Studentească
- 9) Pearce, J. M. (2016). *Return on investment for open source scientific hardware development*. *Science and Public Policy*. 43 (2): 192–195. doi:10.1093/scipol/scv034.
- 10) Phillips, Jack J., Frank Q. Fu, Patricia Pulliam Phillips, and Hong Yi. (2020). *ROI in Marketing: The design thinking approach to measure, prove, and improve the value of marketing*. McGraw-Hill Publishing. Page 178.
- 11) Phillips, JJ (1994). *Measuring Return on Investment (Volume 2)*. American Association for Training and Development.
- 12) Phillips, PP (2023). *The basics of return on investment (ROI)*. American Association for Training and Development.



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Effect of Massed Practice and Distributed Practice Methods on the Accuracy of Backhand Short Service and Forehand Short Service in Badminton Games for the Students of Victory Badminton School Yogyakarta



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ABSTRACT: This research aims to determine: (1) the effect of the massed practice and distributed practice methods on the accuracy of backhand short service in the badminton game of the students of Victory Badminton School Yogyakarta, (2) the effect of the massed practice and distributed practice methods on the accuracy of forehand short service in the badminton game of the students of Victory Badminton School Yogyakarta, (3) which method has a more significant effect whether the massed practice and distributed practice training methods on the accuracy of backhand short service in the badminton game of the students of Victory Badminton School Yogyakarta, (4) which method has a more significant effect whether the massed practice and distributed practice training methods on the accuracy of forehand short service in the badminton game of the students of Victory Badminton School. The research method was an experimental method with a one group design, pretest-posttest design. The research population was 33 students of Victory Badminton School in Yogyakarta. The sampling technique used the purposive sampling. While the number of research samples were 20 adolescent students aged 13-15 years old. Collecting the data was conducted with the short service tests in badminton games. The data analysis with 2x2 analysis of variance.

Based on the results of processing and analysis, the following conclusions can be drawn: (1) the method, massed practice and distributed practice have a significant effect on the accuracy of the backhand short service in the badminton game of the students of Victory Badminton School Yogyakarta, with a calculation of t count at 3.36 and t table at 2.10. (2) the massed practice and distributed practice training methods have a significant effect on the accuracy of the backhand short service in the badminton game of the students of Victory Badminton School Yogyakarta with a t count at 2.84 and t table at 2.10. (3) The massed practice training method has a more significant effect than the distributed practice training method on the accuracy of backhand short service in the badminton game of the students of Victory Badminton School Yogyakarta, with the calculation results (15.84 > 12.60). (4) The massed practice training method has a more significant effect than the distributed practice training method on the accuracy of forehand short service in the badminton game of the students of Victory Badminton School Yogyakarta, with the calculation results (12.84 > 12.60).

KEYWORDS: Massed Practice Training Method, Distribution, Backhand Accuracy Results, Forehand Service in Game of Badminton.

INTRODUCTION

Badminton is a sport that is played using rackets, Arrange shuttlecock and net using a variety of hitting techniques ranging from relatively slow to very fast accompanied by feint movements. Badminton is played on a closed or open court and the playing field is a flat field, made of concrete, wood or carpet, marked with a line as the boundary of the field and limited by a net in the middle of the playing field. This game is individual, which can be played one person against one person, or two people against two people. The main task in the game of badminton aims to turn off the shuttlecock in the opponent's court area. In the game of badminton, as it is known, to get points in order to win the game requires basic things that must be developed in order to have skills in playing badminton, namely mastering various basic badminton techniques.

The basic techniques include: how to hold the racket (grip), pattern of steps or movement of the feet (footwork) to hitting techniques such as service, smash, dropshor, lob, netting, drives and so on. Of the various basic techniques used in badminton games, researchers are interested in discussing service. Service is a basic technique that must be mastered by badminton players, because service is the first shot that is made to start the game with the aim of getting points. (Prabandaru et al., 2020) "That

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service hit was one of the shots taken to start a match, and a shot was done by flying a shuttlecock into the opponent's playing field in a diagonal direction". Therefore a badminton player is required to be able to master service techniques, if a player can serve well and can also direct the desired target service then the player has received the initial capital to win the game. A player who cannot serve properly will be fouled. Unfortunately, many coaches and players do not pay special attention to training and mastering this basic technique. We know that numbers or points in badminton games will not be created if players are not good at serving properly.

METHODS

The method used in this research is the experimental method. (Sugiyono, 2017) The experimental method is: The best research approach (method) is one that is efficient, valid, and reliable, so that the data can be used to solve problems. The population in this study were all 33 participants at the Victory Badminton School in Yogyakarta. The sampling technique used in this study was (purposive sampling). With the criteria for class participants aged 13-15 years who are proficient, using a selection or distribution method according to experts in the field of badminton games, (Komari, 2023) Participants carry out a test reflecting the shuttlecock against the wall using a racket for 30 seconds, students who score high or the participants who get rank 1 and 4 become one group, then those who get rank 2 and 3 become one group.

RESEARCH RESULT

A. Description of Research Result Data

Table 1. Backhand short Test Result Data Massed Practice group service

No	Name	Test Result		
		Pre-test	Post-test	Gain
1	Agung Budi S	24	29	5
2	Aryo Pradipta	23	26	3
3	Gilang Naufal A	22	27	5
4	Fachri Rizky	26	29	3
5	Radento Mandra	25	30	5
6	Dhanis Bima	22	26	4
7	Aktar Fadilah	23	28	5
8	Fadil Hermawan	24	27	3
9	Rizal Maulana	25	29	4
10	Intan Nasuha	24	28	4
Amount		238	279	41
Mean		23,8	27,9	4.1

From the table above it is known that for the pre-test for the mass practice group with a sample of 10, a total of 238 was obtained, the average was 23.8 and for the post-test for the mass practice group with a sample of 10, a total of 279 was obtained, the average was 27,9. The difference in the massed practice group with a sample of 10 resulted in a total of 41, the average being 4.1

Table 2. Distributed Practice Group Backhand Short Service Test Results Data

No	Name	Tes Result		
		Pre-test	Post-test	Gain
1	Budi Prasetya A	24	26	2
2	Ardian Saputra	25	28	3
3	Ihsan Nurrahman	25	27	2
4	Ardi Firmansyah	23	27	4
5	Rizky Dwi Prakoso	25	28	3
6	Satria Dafa R	24	26	2
7	Anwar Mulyana	22	25	3
8	Andi Afrianto	24	27	3
9	Agus Arianto	23	26	3
10	Najwa Chairunnisa	24	28	4
Amount		239	268	29

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Mean	23,9	26,8	2.9
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From the table above it is known that for the pre-test of the distributed practice group with a sample of 10, a total of 239 was obtained, the average was 23.9 and for the post-test with a sample of 10, a total of 268 was obtained, the average was 26.8 . The difference in the mass practice group was 29, the average was 2.9

Table 3. Data on Forehand Short Service Test Results for the Massed Practice Group

No	Name	Test Result		
		Pre-test	Post-test	Gain
1	Agung Budi S	22	26	4
2	Aryo Pradita	25	28	3
3	Gilang Naufal A	23	26	3
4	Fachri Rizky	22	26	4
5	Radento Mandra	26	28	2
6	Dhanis Bima	23	27	4
7	Aktar Fadilah	24	28	4
8	Fadil Hermawan	25	29	4
9	Rizal Maulana	23	28	5
10	Intan Nasuha	24	27	3
Amount		237	273	36
Mean		23,7	27,3	3.6

From the table above it is known that for the pre-test for the mass practice group with a sample of 10, a total of 237 was obtained, the average was 23.7 and for the post-test for the massed practice group with a sample of 10, a total of 273 was obtained, the average was 27, 3. The difference between the massed practice groups was 36. The average was 3.6

Table 4. Data on Forehand Short Service Test Results for the Distributed Practice Group

No	Name	Test Result		
		Pre-test	Post-test	Gain
1	Budi Prasetya A	23	27	4
2	Ardian Saputra	25	27	2
3	Ihsan Nurrahman	22	25	3
4	Ardi Firmansyah	24	26	2
5	Rizky Dwi Prakoso	22	25	3
6	Satria Dafa R	24	26	2
7	Anwar Mulyana	25	28	3
8	Andi Afrianto	22	25	3
9	Agus Arianto	24	28	4
10	Najwa Chairunnisa	24	27	3
Amount		235	264	29
Mean		23,5	26,4	2.9

From the table above it is known that for the pre-test of the distributed practice group with a sample of 10, a total of 235 was obtained, the average was 23.5 and for the post-test with a sample of 10, a total of 264 was obtained, the average was 26.4 . The difference in the distributed practice groups is 29, the average is 2.9

B. Results of Hypothesis Consent

1. Backhand Short Service

For the influence of the massed practice training method with the distributed practice method on the accuracy of the results of backhand short service in the badminton game of the victory yogyakarta badminton school participants. The following summarizes the results of the two-way similarity test (two-party test) listed in the table below.

Effect of Massed Practice and Distributed Practice Methods on the Accuracy of Backhand Short Service and Forehand Short Service in Badminton Games for the Students of Victory Badminton School Yogyakarta

t-Count	t-Table	Conclusion
3,36	2,10	Rejected

The statistical hypothesis proposed for the similarity test of the two means (two parties) is as follows: $H_0 : -t_1 - \frac{1}{2}\alpha < t < t_1 - \frac{1}{2}\alpha$ (located in the reception area) means that there is no influence between the massed practice method and the distributed practice method on the accuracy of the backhand short service in the badminton game of Victory Badminton School participants Yogyakarta. $H_1 : -t_1 - \frac{1}{2}\alpha < t > t_1 - \frac{1}{2}\alpha$ (outside the reception area) means there is influence between massed practice and the distributed practice method on the accuracy of backhand short service in the badminton game of victory yogyakarta badminton school participants. Criteria Accept H_0 If $-t_1 - \frac{1}{2}\alpha < t < t_1 - \frac{1}{2}\alpha$ with dk $(n_1 + n_2 - 2)$ in other cases hypothesis is rejected. From the table above, we get a t-table with $(0,05)$ and dk $n_1 + n_2 - 2$ we get $t_1 - \frac{1}{2}\alpha = 2,10$ and thitung = 3,36 so the tang value is in the rejection area, this means that H_1 is rejected and the conclusion is there is an influence between the massed practice training method and the distributed practice method on the results of the accuracy of backhand short service in the badminton game of victory Yogyakarta badminton school participants.

Table of Results of the Analysis of the Similarity of Two Averages (paired scores) results of backhand service with the massed practice and distributed practice methods in badminton games.

Sample group	t-Count	t-Table	Conclusion
Massed practice	15,18	2,26	Rejected
Distributed practice	12,60	2,26	Rejected

From the results of testing the data in the table, the t-count of the mass practice method (15.18) is greater than the t-table (2.26). while the results of the distributed practice method obtained (12.60) are greater than t-table (2.26). The test criterion is to accept H_0 if $t > t$ -table at a significance level of 0,05 with dk $n_1 + n_2 - 2$. In this case the two training methods $> t$ -table meaning that t-count is in the area of acceptance of H_0 , so the conclusion is that H_0 is rejected so that the exercise massed practice and method exercise distributed practice makes an impact.

2. Forehand Short Service

To determine the influence of massed practice and distributed practice methods on the accuracy of forehand short service in the badminton game of Victory Yogyakarta Badminton School participants. The following summarizes the results of the two-way similarity test (two-party test) listed in the table below.

t-Count	t-Table	Conclusion
2,84	2,10	Rejected

The statistical hypothesis proposed for the similarity test of two means (two sides) is as follows: $H_0 : -t_1 - \frac{1}{2}\alpha < t < t_1 - \frac{1}{2}\alpha$ (located in the reception area) means that there is no influence between the massed practice method and the distributed practice method on the accuracy of the short forehand service in the badminton game of Victory Yogyakarta Badminton School participants Yogyakarta. $H_1 : -t_1 - \frac{1}{2}\alpha < t > t_1 - \frac{1}{2}\alpha$ (outside the reception area) means that there is a significant influence between massed practice and the distributed practice method on the accuracy of the short forehand service in the badminton game of Victory Badminton School participants yogyakarta. Criteria Accept H_0 if $-t_1 - \frac{1}{2}\alpha < t < t_1 - \frac{1}{2}\alpha$ with dk $(n_1 + n_2 - 2)$ in other cases the hypothesis is rejected. From the above table, a table with $(0,05)$ and dk $n_1 + n_2 - 2$ is obtained $t_1 - \frac{1}{2}\alpha = 2,10$ and t-count = 2,84 thus the value of tcount is in the rejection area, this means that H_1 is rejected and The conclusion is that there is an influence between the massed practice training method and the distributed practice method on the results of the accuracy of the Forehand short service in the badminton game of Victory Yogyakarta Badminton School participants

The results of the analysis of the similarity of the two averages (paired scores) for the results of the short service forehand with the method of massed practice and distributed practice of the game badminton.

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Sample group	t-Count	t-Table	Conclusion
<i>Massed practice</i>	13,84	2,26	Rejected
<i>Distributed practice</i>	12,60	2,26	Rejected

From the results of testing the data in the table, the t-count of the mass practice method (13.84) is greater than the t-table (2.26), while the results of the distributed practice method are obtained (12.60) greater than the t-table (2, 26). The test criterion is to accept H_0 if the t-table is at a significant level of 0.05 with $dk_{n_1 + n_2 - 2}$. In this case the two training methods $>$ t-table, meaning that t-count is in the area of acceptance of H_0 , so in conclusion H_0 is rejected so that the massed practice training method and the distributed practice training method have an effect.

DISCUSSION

Age Badminton is a game sport that is individual, can be done by one person against one person or two people against two people. This game requires a racket as a tool to hit the shuttlecock as an object, which is hit back and forth over the net and falls on the opponent's playing field. Service is one of the basic techniques in the game of badminton, short service can be done in the forehand or backhand position. This study intends to determine the accuracy of backhand short service and forehand short service. Service aims to force the opponent to not be able to carry out attacks. In addition, the opponent is forced to be in a defensive position so that he can attack first. To improve service accuracy in badminton games, training must be carried out systematically and continuously, so the right training method is needed. (Suhendro, 2007) "Exercise methods that can be developed to improve technical skills include massed practice and distributed practice". Meanwhile, the distributed practice method is (Suhendro, 2007) that, "Distributed practice is the principle of deep turn regulation exercises where training time arrangements are held with regular rest periods alternately". Differences in the Effect of Massed Practice and Distributed Practice Methods on the Accuracy of Backhand and Forehand Short Service in Badminton Games. Based on the results of processing and analysis, the following conclusions can be drawn: group A (backhand short service) which was given the treatment of the massed practice training method gave a greater influence compared to group B (backhand short service) which was given the treatment of the distributed practice training method with differences results (15.18 $>$ 12.60). Group A (forehand short service) which was given the treatment of the mass practice training method gave a greater effect compared to group B (forehand short service) which was given the treatment of the distributed practice method with different results (13.84 $>$ 12.60). Based on the hypothesis testing, it shows that there is a significant difference in the effect of the massed practice and distributed practice methods on the accuracy of service in the badminton game of Victory Yogyakarta badminton school participants. In the group of participants who were treated with the mass practice training method, they had an increase in the accuracy of the short service accuracy compared to the group of students who are treated with the distributed practice training method. The massed practice training method has a better effect on increasing the accuracy of short service in badminton games, because the massed practice training method requires continuous repetition of movements. (Ming, 2015) badminton skills must be practiced constantly (with repetitive hitting) for players to maintain acceptable levels of performance. By repeating the service continuously. then participants will be more sensitive and able to feel good service done. In addition, through repeated services, it will increase the self-control of the participants. Participants will be able to feel the movements being carried out and will have a better feeling. While in terms of memory system. Mass practice method is a long term memory system. This means that skills that are performed continuously will be stored in memory longer, so that students will have a consistent concept of service movements Meanwhile, the distributed practice training method is a skill exercise interspersed with rest between practice sessions. This will have an impact on decreasing skills, so that the skills learned will take longer to master. Judging from the information process and memory system. short service training distributed practice methods including short term memory system or short term memory. Short term memory is a processing of information that is received in a short time and can be lost quickly because of the length of time or frequent breaks between exercises.

CONCLUSION

Based on the results of data processing and score analysis between Backhand Short service and Forehand Short Service Exercises in badminton games through the massed practice training method and the distributed practice training method, the following conclusions are obtained:

1. The massed practice and distributed practice training methods have a significant influence on the accuracy of the backhand short service in the badminton game of the victory yogyakarta badminton school participants.

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2. The massed practice and distributed practice training methods have a significant effect on the accuracy of forehand short service in the badminton game of Victory Yogyakarta badminton school participants.
3. The massed practice training method has a more significant and distributed effect practice on the accuracy of backhand short service in participant badminton games victory badminton school yogyakarta.
4. The massed practice training method has a more significant effect than distributed practice on the accuracy of forehand short service in the badminton game of Victory Yogyakarta Badminton School participants.

REFERENCES

- 1) Astrawan. P, (2019) Comparison Between the Effects of 10 Repetition 2 Sets Footwork with 5 Repetition 4 Sets Footwork for Improving Trainees' Agility in Badminton Training. *Advances in Social Science, Education and Humanities Research*, volume 394
- 2) Alam F. et.al, (2015) Effect of Porosity of Badminton Shuttlecock on Aerodynamic Drag. Vol.112. 430-435
- 3) Anggiansyah J. (2018) The Influence of Massed Practice and Eye-foot Coordination Methods on the Accuracy of Shooting on Goal in football Games in 14-Year-Old students of Ssb Gama Yogyakarta
- 4) Aksan H. (2016) *Advance Badminton*, Bandung : Nusa Scholar
- 5) Adhi P. B. et.al (2017) The Effect of Exercise Methods and Leg Muscle Strength on Muscle Power .*Journal of Physical Education and Sports*. Semarang
- 6) Di, Berhimping M. W. et.al, (2021) The Effect of Reciprocal Teaching Styles on the Ability to Hit Drop Shot in Badminton Games for SMA Negeri 1 Tahuna Students. *Britain International of Linguistics, Arts and Education (BIoLAE) Journal*.Vol.3 (1) 42-56
- 7) Blomstrand E. & Demant M. (2017) Simulation of a Badminton Racket. A parametric study of racket design parameters using Finite Element Analysis.
- 8) Chandrakumar N. & Ramesh C. (2015) Effect of ladder drill and SAQ training on speed and agility among sports club badminton players. *International Journal of Applied Research*
- 9) Duncan M.J et.al, (2016) The effect of badminton-specific exercise on badminton short-serve performance in competition and practice climates. *European Journal of Sport Science*, DOI: 10.1080/17461391.2016.1203362
- 10) Firdhaus M. et.al, (2018) Material selection in a sustainable manufacturing practice of a badminton racket frame using Elimination and Choice Expressing Reality (ELECTRE) Method. *Journal of Physics: Conference Series*
- 11) Gusliandi F. et.al, (2019) The Effect of Footwork Exercise on Agility in Badminton. *Advances in Social Science, Education and Humanities Research*, volume 464
- 12) Gawin W, et.al, (2017) How To Attack The Service: An Empirical Contribution To Rally Opening In World-Class Badminton Doubles. *International Journal of Performance Analysis in Sport*, 13:3, 860-871, DOI: 10.1080/24748668.2013.11868694
- 13) Hasibuan N. et.al, (2019) The Effect of Drilling Exercise using N and V Model to Improve Forehand Clear Technique for Badminton Beginner Players
- 14) Hasbunallah, & Hasyim. (2021) The Effect of Physical Conditions and Concentration of Elementary Students to the Services Capabilities in Badminton Games. *Journal of Sports and Physical Education*. 8(1) 1-7.
- 15) Hidayat A.K et.al (2022) Motivation Of Badminton Athletes Early Age Group Practice Badminton In The Pbsi Merauke Regency. *International Journal of Social Sciences*. Vol.3
- 16) Haerun M. (2020) Survey Of Short Service Skills In Badminton Game In Bkmf Badminton Students Fik Unm
- 17) Hasibuan N. et.al, (2019) The Effect of Drilling Exercise Using Level Net and Standard Net to Improve Forehand
- 18) Overhead Lob Technique for Badminton Beginner Players. *Advances in Social Science, Education and Humanities Research*, volume 401
- 19) Indarto A. V. et.al Analysis of backhand service badminton doubles athletes in the championship in Banyumas. *International Journal of Physical Education, Sports and Health*. 10(1): 99-103
- 20) Januarto et.al, Improving Forehand Drop Shot Stroke Skill in Badminton Through the Drill Method for Children. *Advances in Health Sciences Research*, volume 29
- 21) Jeki H & Amra F, (2020) The relationship of concentration and eye-hand coordination with accuracy of backhand backspin serve in table tennis. *International Journal of Technology, Innovation and Humanities*.1(1).51-56
- 22) Kasmad R. M. et.al, (2019) The Effect of Hand-Eye Coordination, Wrist Flexibility, and Self-Confidence on Serve Ability in Badminton on Senior High Schools Students. *Advances in Social Science, Education and Humanities Research*, volume 481
- 23) Komari. A, (2018) *seven Goals of Smas Badminton*. Yogyakarta: UNY Press

Effect of Massed Practice and Distributed Practice Methods on the Accuracy of Backhand Short Service and Forehand Short Service in Badminton Games for the Students of Victory Badminton School Yogyakarta

- 24) Lin C. S. H. et.al, (2014) Aerodynamics Of Badminton Shuttlecock: Characterization Of Flow Around Aconical Skirt With Gaps,Behind A Hemispherical Dome. Journal of Wind Engineering and Industrial Aerodynamics.127.29-39
- 25) Maruf, et.al, (2022) Basic Short Service Technical Skills Based On Age Of Children In Pb Athletes. Asjad Badminton Club. 3(2)
- 26) Ming C. S. (2015)Badminton Wall Practice and Training: A Practical Approach. Journal of Physical Education, Recreation & Dance
- 27) Marito Cristine & Nasrulloh A. (2023) Efforts to Improve Backhand Short-Serve Motion Ability in Badminton: Literature Review. International Journal Of Multidisciplinary Research And Analysis
- 28) Nugroho S. et.al, (2021) Effect of intensity and interval levels of trapping circuit training on the physical condition of badminton players
- 29) Prabandaru, R. D. et.al. (2020) Problem-based learning approach to improve service skills of badminton in physical education learning, International Journal of Education and Learning.2(1) 14-24. <https://doi.org/10.31763/ijele.v2i1.74>
- 30) Smith S. M. et.al, (2022) Skill Acquisition and Development Issues with Predictable Badminton Feeding Routines. International Journal of Physical Education, Fitness And Sport. Vol 11. DOI: 10.34256/ijpefs2213
- 31) Sanyal O. (2019) Comparative study of sports emotional intelligence among badminton players on the basis of their level of participation. International Journal of Yogic, Human Movement and Sports Sciences 2019; 4(1): 1503-1505
- 32) Shishido et.al, (2017) Visual Tracking Method of a Quick and Anomalously Moving Badminton Shuttlecock. Vol.5 (3)
- 33) Subarkah & Novitaria (2018) Training Model of Badminton Footwork for Beginner. Advances in Social Science, Education and Humanities Research, volume 278
- 34) Suhendro A, (2007). Fundamentals of coaching. Jakarta: The Open University.
- 35) Sugiyono, (2017) Reserch Methods Aministration. Bandung: Alfabeta
- 36) Vial S. et.al. (2019)Using the trajectory of the shuttlecock as a measure of performance accuracy in the badminton short serve. Internasional jurnal of Sports science & Coaching. Vol. 14(1) 91-96. Doi: 10.117/17479541182662
- 37) Wibawa K.P (2016) The Level Of Proficiency Of Badminton's Short Serve Forehand And Smash Of Male Studens Badminton's Extracurricular Participants Of Smp N 32 Purworejo
- 38) Yusoff, et.al (2022) Determining The Best Badminton Starting Service By Using Projectile Motion. Journal of Mathematicsand Computing Science. Volume 8, No1,12-21.
- 39) Yuliawan & Sugianto (2016) The Effect Of Stroke And Agility Exercise Methodon The Playing Badminton Skillsof Beginner Level Athletes.



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Analysis of Sustainability and Inclusive Strategies in Achieving Profitability: Studies on Banking Listed on the Indonesia Stock Exchange



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ABSTRACT: Sustainable and inclusive finance are concepts that are currently developing rapidly. This concept emerged as a response to the challenges and needs that exist in the current financial system. This study aims to determine the effect of implementing a green banking strategy, fintech adoption, and financial inclusion on profitability in the banking sector in Indonesia. The object of this study are banking companies listed on the Indonesia Stock Exchange for the 2015-2021 period. In this study, it was found that there were 46 banking companies listed on the IDX, but not all of them were sampled. Panel data regression analysis is used to see the effect of independent variables on the dependent variable. This study shows the simultaneous results that green banking strategy, fintech adoption, and financial inclusion significantly affect banking profitability. Partly, implementing green banking strategies and ATM numbers affect bank profits. Meanwhile, fintech adoption, the number of loans, the number of third parties, and the number of branch offices have no effect.

KEYWORDS: sustainability, green banking, fintech, inclusive finance, banking

INTRODUCTION

Indonesia is one of the countries with the highest level of environmental pollution. Air quality in Indonesia, especially in the capital city of Jakarta, is in the first worst ranking, with PM 2.5 concentrations reaching 158 micrograms per cubic meter. This figure has exceeded the clean air standard limits set by WHO (IQAir, 2021). Another environmental pollution that also has a negative impact is water quality. The Ministry of Environment and Forestry report in 2019 shows that the water quality in Indonesia is still mild to heavily polluted (Kementerian Lingkungan Hidup dan Kehutanan, 2021). Based on the quantity of existing natural pollution and damage, they are caused by human behavior as the main factor, so environmental problems like this become a moral problem of human behavior itself (Akhiryanti, 2018).

Efforts to prevent environmental destruction require strong cooperation from various sectors of life. Countries globally unify the vision to develop various effective strategies for sustainable development (*sustainability development*) in various fields. Sustainable development focuses on three main aspects (*triple bottom line/3P*), namely, profit (*profit*), social relations (*people*), and protection of natural resources and the environment (*planet*).

In the economic field, countries that support this vision of sustainable development apply the *green economy concept*, which is expected to provide long-term benefits for society and the environment. A *green economy* is a system that creates economic activities that will improve the quality of human life in the long run without compromising the interests of future generations due to risks related to environmental impacts and ecological limitations (UNEP, 2010). The financial and banking sectors support this green economy strategy through the *sustainable finance program*. The success of *sustainable finance* requires harmony between economic, social, and environmental factors supported by the financial services industry. *Sustainable finance* has five main elements, namely achieving industrial excellence, social and economic activities in order to reduce the threat of global warming and prevent other environmental and social problems, shifting goals towards a competitive low-carbon economy, promoting environmentally friendly investments in various economic sectors, and provide support for the implementation of the 4P development principles (*pro-growth, pro-jobs, pro-poor, and pro-environment*). Then this concept was further studied and modified so that a specific sustainable finance strategy was born for banking, namely *Green Banking*.

Even though the banking industry is not classified as a high-level environmental polluter, implementing *green banking* will impact the bank's reputation so that it can attract public sympathy. The implementation of the concept of *green banking* in Indonesia is regulated in Peraturan Bank Indonesia Nomor 14/ 15 /Pbi/2012 Tentang Penilaian Kualitas Aset Bank Umum (2012) and Peraturan

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Otoritas Jasa Keuangan Nomor 51 /Pojk.03/2017 Tentang Penerapan Keuangan Berkelanjutan Bagi Lembaga Jasa Keuangan, Emiten, Dan Perusahaan Publik (2017) where financial service institutions and issuers or public companies are required to inject funding sources aimed at sustainable development and funding related to climate change is provided in adequate amounts. A positive impact will be obtained if banks apply *green banking*; firstly, the awareness of business people on the importance of environmentally friendly business practices will increase. Second, it is more paperless because banks that apply the concept of green banking will make transactions *online*.

Moreover thirdly, business people are concerned and concerned about their business practices because there is a policy from banks to give loans to business people with conditions that the business must be environmentally friendly (Sharma et al., 2022). Through *green banking*, which in its business processes cares about the environment and the sustainability of human life, it also results in operational cost efficiency, competitive advantage, good corporate image and identity, and achievement of business targets. However, on the other hand, *green banking activities* have a negative effect on the efficiency of the company's operational costs; where every year of observation, the company's BOPO ratio has increased so that the level of efficiency of the company's operational costs has decreased every year (Pusva & Herlina, 2017). The practice of *green banking* recommends that banking operations will be much better if they implement *online banking*, *mobile banking*, and *green cards*, whose materials can be recycled to be more *paperless*. One solution to this is through *financial technology (fintech)*, which uses technology to maximize financial services (Harefa et al., 2018). Currently, banking *fintech services* that are frequently used are ATMs (*Automatic et al.*), *e-banking*, *phone banking*, *SMS banking*, *mobile payments*, and *e-money*.

Banking goals can also be achieved by utilizing fintech to improve financial performance (reducing operational costs, increasing profitability, and overcoming non-performing loans). Apart from increasing banking profitability, adopting and developing fintech in its operational activities also includes activities that support increasing financial inclusion. The National Financial Literacy and Inclusion Survey from OJK shows that Indonesia's financial inclusion index reached 85.10%, an increase from the previous survey period conducted in 2019 with an index of 76.19%. Increasing financial inclusion in Indonesia has impacted the growth of the banking business because the number of customers has also increased. Financial inclusion positively impacts banking profitability, both in developed markets such as Germany and the United States and in developing markets such as India and Indonesia (Kumar et al., 2022a). Banks operating in countries with high levels of financial inclusion will have good financial performance because the number of customers and financial transactions increases. Hence, the income and profits of the banking industry also increase (Demirgüç-Kunt et al., 2020).

Green banking, *fintech* adoption, and financial inclusion have a close relationship because all three have the same goal: to promote sustainable and inclusive economic growth. This research aims to provide knowledge and empirical evidence about the effect of implementing *green banking*, *fintech*, and financial inclusion as a strategy for the profitability of banks listed on the Indonesia Stock Exchange. The results of this study will provide encouragement and motivation for banks to implement *green banking*, adopt *fintech*, and increase financial inclusion if the results positively affect bank profitability. The more and the maximum number of banks implement this matter, the more environmental sustainability can be maintained, environmental pollution will gradually decrease, and a sustainable economy can be achieved.

HYPOTHESIS DEVELOPMENT

The Effect of Green Banking Policy on Profitability

The green banking policy describes banking efforts to be socially responsible towards the environment. Based on research from Rachman & Saudi (2021), *green banking* positively impacts profitability proxied by ROA. The high *green banking* index indicates that the more influential the banking system is in implementing *green banking* to achieve a *green economy*, which will have implications for increasing profitability. These results are also supported by various studies from Deka (2015) and Chasbiandani et al. (2019), which state that *green banking policies* positively impact banking profitability.

H1: It is suspected that there is a positive influence between *Green Banking Policy* on Banking Profitability

Effect of Fintech Adoption on Profitability

Banks that have adopted *fintech* in carrying out their activities will have advantages in terms of speed and accuracy of business operational processes. Wang et al. (2021) stated that adopting *fintech* in banking operations will positively and significantly impact ROA. For commercial banks, *fintech* development increases profitability, financial innovation, and risk control. Click or tap here to enter text. In their research, Le et al. (2021) also concluded that *fintech innovation*, especially *mobile banking*, positively impacts the financial performance of banks in Vietnam. The above research is supported by Ogutu (2018) and (Rauf & Fu, 2014), who state that *fintech adoption* positively and significantly impacts ROA. Meanwhile, (Akhisar et al., 2015) his research, he concluded that

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electronic banking services (*Fintech*) have a significant and negative effect on profitability due to the diversity of levels of state development, sociocultural structures, and electronic banking infrastructure.

H2: It is suspected that there is a positive influence between *Fintech Adoption* on Banking Profitability

Effect of Loan Amount on Banking Profitability

The more credit disbursement is made, the more banking income is obtained from credit recipients (debtors) in the form of interest and administrative costs. Thus, the higher the quantity of loans or credit is directly proportional to the increase in profitability of a bank. This is in line with the results of research by Wei et al. (2021), who found that credit growth positively affects profitability proxied by ROA because if credit grows, the interest income received by banks will also increase. However, it is different from the results of research by (F. Shihadeh & Liu, 2019), which concludes that there is a negative effect between credit growth on ROA. This is because there are other factors, such as credit risk and cost of capital, which may significantly influence ROA as a proxy for profitability.

H3: It is suspected that there is a positive influence between the number of loans on bank profitability

Effect of Total Third-Party Funds on Banking Profitability

One source of banking funds as an institution with an intermediary function is from Third Party Funds. According to Kasmir (2014), third-party funds are collections of funds collected by banks obtained from customers. DPK consists of various deposits, such as savings, time deposits, current accounts, and other customer fund accounts. Findings from research by Shihadeh et al. (2018) concluded that the amount of third-party funds from MSMEs positively impacts ROA but is not significant. Larasati et al. (2017) also conclude that there is no significant influence between third-party funds and bank profitability. This is due to an imbalance in the collection of funds with credit distributed to the public.

H4: It is suspected that there is a positive influence between the Amount of Third Parties Funds on banking profitability

Effect of Number of ATM Units on Banking Profitability

For banks, providing ATMs will result in *fee-based income* from customer administration fees when transacting using ATMs. Shihadeh et al. (2018) examined the relationship between financial inclusion and banking performance in Jordan. They found that the number of ATMs and the number of credit cards had an impact on increasing bank profitability. While the findings from the study, Widyaningsih & Hersugondo (2021) concluded that the number of ATMs has a significant negative effect on bank profitability because the more ATM units, the greater the machine maintenance costs, and these costs cannot be fully covered by the income earned from ATMs.

H5: It is suspected that there is a positive influence between the number of ATM units on banking profitability

Effect of Number of Branch Banks on Banking Profitability

Procurement of branch offices can increase revenue because many customers come and make transactions because they are easy to visit and more cost-effective. Based on research conducted by Kumar et al. (2022) and Chen et al. (2018), It can be concluded that there is a positive and significant influence between the number of branch offices and the profitability of a bank because an increase in the number of branch offices will increase the number of customers which will ultimately increase savings and loan portfolios and diversify risks. In comparison, the findings by Harimaya & Kondo (2016) in his research shows that the number of branch offices at a certain level will result in lower cost inefficiencies. However, this is also influenced by the region of the branch office.

H6: It is suspected that there is a positive influence between the Number of Banking Branch Offices on bank profitability

METHOD

Population and Sample

The population in this study are all banking companies listed on the Indonesia Stock Exchange or IDX. This research is included in the panel data research with a research period of 10 years from 2012-2021. Then obtained, 46 companies in the banking sector were listed on the IDX. From the results of classifying the sample, 29 out of 46 banking companies listed on the Indonesia Stock Exchange for the 2015-2021 period met the criteria to be sampled in this study. This research was conducted from 2015-2021 or seven consecutive years. Hence, annual and financial reports total 203 data from the company's official website and the Indonesia Stock Exchange (www.idx.com). The data were also obtained from several other sources, such as 99 books, scientific journals, and other literary works that could be useful in the research process.

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Research Variables

This study has six independent variables: *green banking policy*, *fintech* adoption, the number of loans, the number of third-party funds, the number of ATMs, and the number of branch offices. While there is one dependent variable, namely profitability. This study uses three control variables to minimize the influence other than the independent variables that may influence the results of the dependent variable, namely liquidity, capital adequacy, and non-performing loans.

The summary of the variables and their measurements used in this study are as follows:

Table 1. Variables and Measurements

Variable	Symbol	Measurement
Green Banking Policy (X1)	GBDI	Expected number of <i>green banking indicators</i> x 1 if disclosed; x 0 otherwise
Fintech Adoption (X2)	FINTECH	Dummy variable
Loan Amount (X3)	FIN_LOAN	Loan amount/GDP x 100%
Total Third Party Funds (X4)	FIN_DEPO	Total third-party funds/GDP x 100%
Number of ATMs (X5)	ATM	Number of ATMs/Number of adult population x 100
Number of Branch Offices (X6)	BRANCH	Number of branch offices/Number of adult population x 100
Profitability (Y)	ROA	Net profit after tax/total assets
Liquidity (X7)	LDR	Credits given/Funds received x 100%
Capital Adequacy (X8)	CAR	Risk-balanced capital/assets x 100%
Problem Credit (X9)	NPLs	Non-performing loans/total credit x 100%

Source: Research Summary, 2023

Data analysis

This study uses the panel data analysis method using Stata 17 software to facilitate research data processing. Panel data regression is a regression that combines *time series data* and *cross-section data*. The equation for estimating regression with panel data in this study is:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \beta_7 X_{7it} + \beta_8 X_{8it} + \beta_9 + e_{it}$$

To describe the regression estimation with panel data, three models are used, namely 1) the *standard effect method*, 2) the *fixed effect method*, and 3) the *random effect method*. In order to determine the best approximation model, we can do the Chow Test and Hausman Test (Widarjono, 2017). Furthermore, to test the hypothesis simultaneously (F-test) and partially (T-test) and test the coefficient of determination (R^2).

RESULTS

Results of Descriptive Statistics

The results of descriptive statistics in this study can be seen in the table below:

Table 2. Descriptive Statistics

	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9
Means	0.01	0.53	2.54	0.01	0.015	2.08	0.22	0.85	0.21	0.04
minimum	-	0.05	0	0.00016	0.00019	0	0.005	0.12	0.08	0
	0.1475									
Maximum	0.04	1	4	0.09	0.10	12,8	1.28	1.63	0.98	0.63
std. Deviation	0.03	0.26	1.04	0.021	0.025	3.57	0.29	0.19	0.08	0.05
Observations	203	203	203	203	203	203	203	203	203	203

Source: Data processed using Stata 17

The analysis results in Table 4.1 show that the number of observations is 203, consisting of 29 banking sector companies listed on the Indonesia Stock Exchange. Variable Y or *Return on Assets* (ROA) produces a *mean* (average) of 0.02 or 2%, meaning that a sample of 29 banks has an average ROA value of 2%. The maximum value for the ROA variable is 0.04 or 4%, meaning that the

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highest ROA is 4% and is found at PT Bank Mega in 2021, while the minimum value is -0.1475 or -14.75%, meaning that the lowest ROA value is of -14.75% and will be at PT Bank Raya Indonesia in 2021.

The GDBI variable (X1) produces an average value of 0.53, which means that the average disclosure index of 115 green banking activities from 29 banking samples is 53%. The maximum value is 1 or 100%, meaning that the highest *green banking index* is 100%, and was founded at PT Bank Rakyat Indonesia in 2019. The minimum value for the GDBI variable is 0.05, meaning 5% at PT Bank Bumi Arta in 2015. The standard deviation of the variable X1 (0.26) < the mean value indicates that the GDBI data has more limited variability or data spread.

The Fintech Adoption Variable (X2) has a mean of 2.54, meaning that the average fintech adopted by 29 banking samples is 2.54, or when rounded up, it becomes three fintech. The minimum value of the FINTECH variable is 0, meaning that the lowest number of adopted fintech is 0 or does not adopt fintech. The maximum value is 4, meaning that the highest number of fintechs adopted is four fintechs. The value of the data distribution at the standard deviation of X2 is 1.04. The standard deviation of variable X2 < the mean value indicates that fintech adoption data has more limited variability or data spread.

The Financial Inclusion Variable proxied by the Number of Loans (X3) produces an average value of 0.01, meaning that the average level of financial inclusion of the 29 banking samples is 1% when using a proxy for the number of loans. The maximum value is 0.09, meaning that the highest level of financial inclusion is 9%, found at PT Bank Rakyat Indonesia in 2020. The minimum value for variable X3 is 0.00016, meaning that the lowest level of financial inclusion is 0.016%, found at PT BANK IF INDIA INDONESIA in 2021. The standard deviation of the X3 variable is 0.021 > the mean value indicates that the data is spread more widely or has a more considerable variance.

The Financial Inclusion variable proxied by Total Third Party Funds (X4) produces an average value of 0.015, which means that the average level of financial inclusion of the 29 banking samples is 1.5% when using a proxy for the number of third-party funds. The maximum value of 0.10 was found at PT Bank Rakyat Indonesia in 2020. The minimum value for the X4 variable is 0.00019 at PT BANK IF INDIA INDONESIA in 2021. The standard deviation of the X4 variable is 0.025 > the average value obtained indicates that the data is spread more widely or has more significant variance.

The Financial Inclusion variable proxied by the number of ATMs (X5) produces an average value of 2.08. This means the average financial inclusion level of the 29 banking samples is 2.08 or 208 ATMs per 100 residents. The maximum value is 12.8, meaning that the highest level of financial inclusion is 12.8 or 1,280 ATMs per 100 adult population, found in PT Bank Rakyat Indonesia and Bank Raya Indonesia in 2017. The minimum value of variable X5 is 0, meaning that the level of the lowest financial inclusion is 0 number of ATMs per 100 adult population. The standard deviation of the X5 variable is 3.57 > the mean value indicates that the data is spread more widely or has a more significant variance.

The Financial Inclusion variable proxied by the Number of Branch Offices (X6) yields an average value of 0.22, meaning that out of 29 banking samples, there are 22 branch offices per 100 adult population using the proxy for the number of branch offices owned. The maximum value is 1.28, meaning that the highest level of financial inclusion is 1.28 or 128 branch offices per 100 adult population at PT BANK MANDIRI in 2017. The minimum value of variable X6 is 0.005, meaning that there are 0.5 total branch offices per 100 adult population at PT BANK IF INDIA INDONESIA in 2017. The standard deviation of FINBRANCH is 0.29 > the average value obtained indicates that the data is spread more widely or has a more significant variance.

The Liquidity Variable proxied by the LDR ratio (X7), as well as the control variable, produces an average value of 0.85, which means that the average level of liquidity of the 29 banking samples is 85%. The maximum value is 1.63 or 163%, found in PT BANK BTPN in 2019. The minimum value of the X7 variable is 0.12, which was found in PT BANK CAPITAL INDONESIA in 2021. The standard deviation of LDR is 0.19 < the average value. The mean obtained indicates that the LDR data has more limited variability or data spread.

The capital adequacy variable proxied by the CAR ratio (X8) and the control variable produces an average value of 0.21, which means that the average capital adequacy level of the 29 banking samples is 21%. The maximum value of 0.98 or 98% is found in PT BANK IF INDIA INDONESIA in 2021. The minimum value of the X8 variable is 0.08 in PT BANK PEMBANGUNAN DAERAH BANTEN in 2015. The value of the data distribution at the standard deviation of CAR is 0.08 < the average value indicating that the CAR data has more limited variability or data spread.

For Non-Performing Loans Variable, based on descriptive statistics, the average level of non-performing loans (NPL/X9) from 29 banking samples is 4%. The maximum 0.63 or 63% value is found in PT BANK JTRUST INDONESIA 2021. The minimum value for variable X9 is 0%, found in PT BANK CAPITAL INDONESIA in 2020 and 2021. The standard deviation value of NPL is 0.05 > the average value obtained indicates that the data is spread more widely or has a more significant variance.

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Panel Data Regression Results

From the test results using the Chow test and Hausman test, it can be concluded that *the fixed effect model* is the most suitable model to be used as a panel data regression analysis in this study. Interpretation of the regression results based on this model is to obtain a deeper understanding regarding the influence of the studied variables, which are summarized in the following table:

Fixed Effect Model Panel Data Regression Results

Variable	Coef	Std. Err.	t	P> t
C	0.0187824	0.0188368	1.00	0.320
LogX1	0.0118036	0.0039549	2.98	0.003
X2	-0.0050538	0.0036446	-1.39	0.167
X3	0.102785	1.082439	0.09	0.924
X4	-0.1412789	0.7376355	-0.19	0.848
X5	0.0042389	0.0015105	2.81	0.006
X6	0.0004164	0.0185518	0.02	0.982
X7	0.0054048	0.0123955	0.44	0.663
X8	0.0103368	0.0233463	0.44	0.659
X9	-0.0902836	0.0304594	-2.96	0.003
R-Squared	0.1410	F-Statistics		3.01
Prob (F-statistic)	0.0024			

Source: Research Processed Data, 2023

Based on the processing results in Table 3 above, the model equation is as follows:

$$ROA = 0.0187824 + 0.0118036 \text{ GBDI} - 0.0050538 \text{ FINTECH} + 0.102785 \text{ FIN_LOAN} - 0.1412789 \text{ FIN_DEPO} + 0.0042389 \text{ FIN_ATM} + 0.0004164 \text{ FIN_BRANCH} + 0.0054048 \text{ LDR} + 0.0103368 \text{ CAR} - 0.0902836 \text{ NPL}$$

The results of the equation above can be translated as follows:

Independent variables of *green banking policy* (GBDI), *fintech* adoption (FINTECH), financial inclusion by proxy of the number of loans (FIN_LOAN), financial inclusion by proxy of the number of third-party funds (FIN_DEPO), financial inclusion by proxy of the number of ATMs (FIN_ATM), financial inclusion by proxy number of branch offices (FIN_BRANCH), liquidity level (LDR), capital adequacy level (CAR), and non-performing loans (NPL) are considered 0, then ROA is 1.878 %.

Assuming that each of the other variables is in a constant or fixed condition, from the panel data regression analysis above, it is found that:

1. *Green banking* policy (X1) positively affects ROA or banking profitability by 1,180%.
2. The fintech adoption variable (X2) that negatively affects ROA is -0.00505, where every 1% increase in fintech adoption will decrease ROA or banking profitability by 0.5054%.
3. The financial inclusion variable with a proxy for the number of loans (X3) shows that any increase in financial inclusion with a proxy for the loan amount of 1% will increase ROA or banking profitability by 0.2785%.
4. The financial inclusion variable with a proxy for the number of third-party funds (X4) shows that any increase in financial inclusion with a proxy for the number of third-party funds of 1% will decrease ROA or bank profitability by 14.1278%.
5. The financial inclusion variable with a proxy for the number of ATMs (X5) increases bank ROA or profitability by 0.4239%.
6. The financial inclusion variable with a proxy for the number of branch offices (X6) shows that any increase in financial inclusion with a proxy for the % of branches of 1% will increase banking ROA or profitability by 0.4164%.
7. The variable level of liquidity (X7) shows that each increase in the proportion of liquidity by 1% will increase ROA or banking profitability by 0.5405%.
8. The capital adequacy level variable (X8) shows that each increase in the proportion of liquidity by 1% will increase ROA or banking profitability by 1.0337%.
9. The non-performing loans variable (X9) has a negative regression coefficient of -0.0902836, which means that any increase in non-performing loans will reduce ROA or bank profitability by 9.0284%.

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Hypothesis test

Test Results t

In this test, it is assumed that when the probability value of *the t*-statistic is smaller than the alpha value (t -statistic $< \alpha/0.05$), then the hypothesis of each variable is accepted. The result of the t-test for the GBDI variable is $0.003 < 0.05$, so *green banking* policy significantly influences the profitability variable proxied by Return on Assets (ROA). Then the p-value of fintech adoption is $0.167 > 0.05$, indicating no significant effect on banking profitability. Likewise, the Financial Inclusion variable with the Proxy of Loan Amount and the Proxy of Third Party Funds, respectively, has a p-value of 0.924 and $0.848 > 0.05$, so the two variables do not significantly affect profitability. The Financial Inclusion Variable with the Proxy Number of ATMs shows that 0.006 on a P-value < 0.05 indicates a significant influence on profitability. Furthermore, the financial inclusion variable with the Proxy Number of Branch Offices has no effect with a p-value of $0.982 > 0.05$.

The liquidity variable has a p-value of $0.663 > 0.05$, meaning there is no significant difference between banks with higher LDR ratios and banks with lower LDR ratios. The capital adequacy variable also shows a p-value greater than 0.05, which is 0.659, so there is no significant difference between banks with higher and lower CAR ratios. The non-performing credit variable has a highly significant effect with a p-value of $0.003 < 0.05$ with a negative coefficient, indicating that increasing non-performing loans will undoubtedly reduce bank profits.

Based on the results of each t-test, it is concluded that H1 and H5 are accepted, and H2, H3, and H4 are rejected.

F Test Results (Model Feasibility)

Based on the processing results in the fixed effect model test, it produces a probability value of F-Statistic of 0.0024, which is smaller than alpha 5% ($0.0024 < 0.05$), which means H0 is rejected. Thus, it can be concluded that the variables of *green banking policy*, *fintech* adoption, level of financial inclusion by proxy of the number of loans, financial inclusion by proxy of third-party funds, financial inclusion by proxy of the number of ATMs, and financial inclusion by proxy of the number of branch offices **together** affect the profitability of 29 banks listed on the Indonesia Stock Exchange at the 2015-2021 representative year.

Coefficient of Determination (R^2)

R^2 test show that profitability with a proxy Return on Assets (ROA) **of 14.10% can be explained by the *green banking* policy variable, *fintech* adoption, the level of financial inclusion with a proxy for the number of loans, financial inclusion with a proxy for third party funds, financial inclusion with a proxy for total ATMs, and financial inclusion by proxy for the number of branch offices.** While other variables outside this research model explain the remaining 85.90%.

DISCUSSION

Analysis of the Effect of Green Banking Policy on Profitability

Green banking is not just a means of dissolving environmental and social responsibility but has become one of the strategies to gain profits and the continuity of the banking business. The reasons that influence it include operational efficiency, portfolio diversification, market growth, consumer demand, and a positive image as a long-term benefit. The results of this study indicate that *green banking policies have a positive effect* on profitability. This follows previous research from Rachman & Saudi (2021).

Analysis of the Effect of Adoption of Fintech on Profitability

According to the statistical analysis results conducted in this study, no strong correlation and evidence was found between the diversity of fintech adoption and banking profitability. The results of this study also do not support the hypothesis which states that fintech adoption has an influence on profitability for the following reasons:

1. Implementation and development costs.
2. Intense competition.
3. Mismatch with customer preferences.
4. Data security and privacy risks
5. The need for regulatory reform.

The results of this study are contradictory to research conducted by et al. (2021); Ogutu (2018); Rauf & Fu(2014); dan Wang et al. (2021), who found that the adoption of fintech in banking operations will have a positive and significant impact on profitability. However, the results obtained from this study are in line with findings by (Aditya & Rahmi, 2022; Ali Khrawish & Mousa Al-Sa, n.d.; Gutu, 2014; Mohammad Hossein, 2013), stating that **fintech adoption does not affect banking profitability.**

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Analysis of the Effect of Financial Inclusion with a Proxy of Loan Amount on Profitability

The results of this study also do not support the hypothesis that Financial Inclusion with a Proxy Number of Loans influences profitability. This finding is in line with the findings of research conducted by Shihadeh et al. (2019), Chen et al. (2018), and Kumar et al. (2022), which state that there is no **significant effect of lending on the profitability of a bank** because there is credit risk: income diversification, and factors related to the stability of interest income.

Analysis of the Effect of Financial Inclusion with a Proxy of Total Third-Party Funds on Profitability

According to the statistical analysis results conducted in this study, no strong correlation or evidence was found between the amount of Third Party Funds and banking profitability. This study's results contradict research conducted by Han & Melecky (2013) dan Kistiyaputri (2022), who found that an increase in customer deposits can prevent the risk of withdrawing deposits when banks are in a state of financial stress. The results of this study are in line with the findings by (Ayu Larasati et al. 2017; Mahmudah & Harjanti, 2016; F. H. Shihadeh et al., 2018), which state that there is no significant influence between third-party funds and banking profitability.

Analysis of the Effect of Financial Inclusion with a Proxy Number of ATMs on Profitability

The existence of an ATM is one source of income or profit. This idea was built for operational efficiency, increasing *free-based income, branding* to customers, and ease of access that customers will get. This study found that financial inclusion by proxy of the number of ATMs **positively affects profitability**. This result is relevant to previous findings from (Aliabadi et al., 2016; Chaarani & Abiad, 2018; Jacinta Itah, 2014; Sumra et al., 2011), the opinion that the number of ATMs as a proxy for financial inclusion strategy has a significant positive impact on profitability.

Analysis of the Effect of Financial Inclusion with a Proxy of the Number of Branch Offices on Profitability

The results of this study also do not support the hypothesis that Financial Inclusion with the number of branch offices influences profitability because there are factors of changes in customer preferences and the development of digital services. The results of this study are in line with findings by those Harimaya & Kondo (2016), Hensel (2003), dan Hirtle (2007), who concluded that the number of branch offices at a certain level would result in lower cost inefficiencies therefore, whether or not the number of branch offices owned by banks does not significantly affect profitability.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the hypothesis testing of the variables tested, it can be concluded that *green banking policy* (H1) and financial inclusion with a proxy for the number of ATMs (H5) have a positive and significant effect on profitability as measured by *Return on Assets* (ROA). While adopting *fintech*, financial inclusion with the number of loans and branch offices has no significant effect on banking profitability as measured by ROA. Nevertheless, simultaneously, the independent variables tested, namely the green banking disclosure index (GBDI), the number of adopted fintech, financial inclusion by proxy, the number of loans, the number of third-party funds, the number of ATMs, and the number of branch offices together have a significant effect on banking profitability which measured by *Return on Assets* (ROA) in banks listed on the Indonesia Stock Exchange.

The results of this study certainly still have many shortcomings, so it is suggested for further research to increase the measurement parameters for each variable using more specific and complex indicators and add a classification component to the selection of more complete and up-to-date research samples.

REFERENCES

- 1) Aditya, M. A., & Rahmi, A. N. (2022). Pengaruh Financial Techonology terhadap Profitabilitas Bank Umum Syariah Indonesia. *Jurnal Keuangan Dan Perbankan*, 18(2), 77–88. <https://doi.org/10.35384/JKP.V18I2.334>
- 2) Akhiryanti, F. (2018). *Meningkatkan Ekoliterasi Anak Melalui Strategi Garden Based Learning di Taman Kanak-kanak: Penelitian Tindakan Kelas di TK Islam Medissina Tahun Ajaran 2017/2018* [Universitas Pendidikan Indonesia]. <http://repository.upi.edu/39034/>
- 3) Akhisar, İ., Tunay, K. B., & Tunay, N. (2015). The Effects of Innovations on Bank Performance: The Case of Electronic Banking Services. *Procedia - Social and Behavioral Sciences*, 195, 369–375. <https://doi.org/10.1016/J.SBSPRO.2015.06.336>
- 4) Ali Khrawish, H., & Mousa Al-Sa, N. (n.d.). *The Impact of E-Banking on Bank Profitability: Evidence from Jordan*. Retrieved July 15, 2023, from <http://www.eurojournals.com/MEFE.htm>
- 5) Aliabadi, H. S., Gheysari, H., & Ahmadian, S. (2016). A Survey on the Impact of Using “POS” and “ATM” on Profitability (Return on Assets) of Iranian Private Banks. *Iranian Journal of Business and Economics*, 3(3).

Analysis of Sustainability and Inclusive Strategies in Achieving Profitability: Studies on Banking Listed on the Indonesia Stock Exchange

- 6) Ayu Larasati, D., Hidayati, S., & Ekonomi dan Bisnis, F. (2017). TINGKAT KECUKUPAN MODAL, DANA PIHAK KETIGA DAN RISIKO BISNIS TERHADAP PROFITABILITAS BANK YANG TERDAFTAR DI BURSA EFEK INDONESIA. *Jurnal Ekobis*, 4(2), 117–136. <https://doi.org/10.35590/JEB.V4I2.740>
- 7) Chaarani, H. EL, & Abiad, Z. EL. (2018). Journal of Internet Banking and Commerce The Impact of Technological Innovation on Bank Performance. *Journal of Internet Banking and Commerce*, 23(3). <http://www.icommercecentral.com>
- 8) Chasbiandani, T., Rizal, N., & Indra Satria, I. (2019). Penerapan Green Accounting Terhadap Profitabilitas Perusahaan Di Indonesia. *AFRE (Accounting and Financial Review)*, 2(2). <https://doi.org/10.26905/afr.v2i2.3722>
- 9) Chen, F.-W., Feng, Y., & Wang, W. (2018). Impacts of Financial Inclusion on Non-Performing Loans of Commercial Banks: Evidence from China. 10, 3084. <https://doi.org/10.3390/su10093084>
- 10) Deka, G. (2015). Green Banking Practices: A Study on Environmental Strategies of Banks With Special Reference to State Bank of India. *Indian Journal of Commerce and Management Studies*, 6(3).
- 11) Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). The Global Findex Database 2017: Measuring Financial Inclusion and Opportunities to Expand Access to and Use of Financial Services. *The World Bank Economic Review*, 34(Supplement_1), S2–S8. <https://doi.org/10.1093/WBER/LHZ013>
- 12) Gutu, L. M. (2014). The impact of Internet technology on the Romanian banks performance. *Proceedings of International Academic Conferences*. <https://ideas.repec.org/p/sek/iacpro/0702397.html>
- 13) Han, R., & Melecky, M. (2013). Financial Inclusion for Financial Stability Access to Bank Deposits and the Growth of Deposits in the Global Financial Crisis Background Paper to the 2014 World Development Report. <http://econ.worldbank.org>.
- 14) Harefa, A. A., Sariguna, P., Kennedy, J., Ekonomi, F., & Bisnis, D. (2018). THE FINANCIAL TECHNOLOGY, REGULATION AND BANKING ADAPTATION IN INDONESIA. *Fundamental Management Journal*, 3(1), 1–11. <http://ejournal.uki.ac.id/index.php/jm/article/view/715>
- 15) Harimaya, K., & Kondo, K. (2016). Effects of branch expansion on bank efficiency: evidence from Japanese regional banks. *Managerial Finance*, 42(2), 82–94. <https://doi.org/10.1108/MF-11-2014-0278/FULL/PDF>
- 16) Hensel, N. D. (2003). Strategic Management of Cost Efficiencies in Networks: Cross-country Evidence on European Branch Banking. *European Financial Management*, 9(3), 333–360. <https://doi.org/10.1111/1468-036X.00224>
- 17) Hirtle, B. (2007). The impact of network size on bank branch performance. *Journal of Banking & Finance*, 31(12), 3782–3805. <https://doi.org/10.1016/J.JBANKFIN.2007.01.020>
- 18) IQAir. (2021). *World Air Quality Report (Region & City PM 2.5 Ranking)*.
- 19) Jacinta Itah, A. (2014). Impact of Cashless Banking on Banks' Profitability (Evidence from Nigeria). *Asian Journal of Finance & Accounting*, 6(2). <https://doi.org/10.5296/ajfa.v6i2.6268>
- 20) Kasmir. (2014). *Analisis laporan keuangan*. Rajawali Press. <https://onsearch.id/Record/IOS3450.INLIS00000000003305?widget=1>
- 21) Kementerian Lingkungan Hidup dan Kehutanan. (2021). *Laporan Kinerja: Menebalkan Modal Sosial, Mmperkuat Kinerja Positif Pembangunan LHK*.
- 22) Kistiyaputri, A. (2022). Pengaruh Dana Pihak Ketiga dan Total Aset Terhadap Laba Bank Syariah Indonesia. *Jurnal Ekonomika Dan Bisnis Islam*, 5(3), 41–51. <https://doi.org/10.26740/JEKOB.I.V5N3.P41-51>
- 23) Kumar, V., Thrikawala, S., & Acharya, S. (2022a). Financial inclusion and bank profitability: Evidence from a developed market. *Global Finance Journal*, 53, 100609. <https://doi.org/10.1016/J.GFJ.2021.100609>
- 24) Kumar, V., Thrikawala, S., & Acharya, S. (2022b). Financial inclusion and bank profitability: Evidence from a developed market. *Global Finance Journal*, 53, 100609. <https://doi.org/10.1016/J.GFJ.2021.100609>
- 25) Le, T. T., Mai, H. N., Phan, D. T., Nguyen, M. N. T., & Le, H. D. (2021). Fintech Innovations: The Impact of Mobile Banking Apps on Bank Performance in Vietnam. *International Journal of Research and Review (Ijrrjournal.Com)*, 8, 391. <https://doi.org/10.52403/ijrr.20210446>
- 26) Mahmudah, N., & Harjanti, R. S. (2016). ANALISIS CAPITAL ADEQUACY RATIO, FINANCING TO DEPOSIT RATIO, NON PERFORMING FINANCING, DAN DANA PIHAK KETIGA TERHADAP TINGKAT PROFITABILITAS BANK UMUM SYARIAH PERIODE 2011-2013. *Prosiding Seminar Nasional IPTEK Terapan (SENIT) 2016 Pengembangan Sumber Daya Lokal Berbasis IPTEK*, 1(1). <http://ejournal.poltektegal.ac.id/index.php/prosiding/article/view/370>
- 27) Mohammad Hossein, S. (2013). Consideration the effect of E-Banking on Bank Profitability; Case Study Selected Asian Countries. *Journal of Economics and Sustainable Development Wwww.liste.Org ISSN*, 4(11). www.iiste.org

Analysis of Sustainability and Inclusive Strategies in Achieving Profitability: Studies on Banking Listed on the Indonesia Stock Exchange

- 28) Ogutu, M. (2018). *Effect Of E-banking On Financial Performance Of Listed Commercial Banks In Kenya*. <https://repository.kcau.ac.ke/handle/123456789/493>
- 29) PERATURAN OTORITAS JASA KEUANGAN NOMOR 51 /POJK.03/2017 TENTANG PENERAPAN KEUANGAN BERKELANJUTAN BAGI LEMBAGA JASA KEUANGAN, EMITEN, DAN PERUSAHAAN PUBLIK, Pub. L. No. 51 /POJK.03/2017, Otoritas Jasa Keuangan (2017).
- 30) PERATURAN BANK INDONESIA NOMOR 14/ 15 /PBI/2012 TENTANG PENILAIAN KUALITAS ASET BANK UMUM, Pub. L. No. 14/ 15 /PBI/2012, Bank Indonesia (2012).
- 31) Pusva, I. D., & Herlina, E. (2017). Analysis of the implementation of green banking in achieving operational cost efficiency in the banking industry. *The Indonesian Accounting Review*, 7(2), 203–210. <https://doi.org/10.14414/tiar.v7i2.1602>
- 32) Rachman, A. A., & Saudi, M. H. (2021). Green Banking And Profitability (Banks Registered On The Sri-Kehati Index In Indonesia Stock Exchange 2015 - 2019). *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(8), 473–486. <https://doi.org/10.17762/TURCOMAT.V12I8.2824>
- 33) Rauf, S., & Fu, Q. (2014). Integrated Model to measure the Impact of E-Banking Services on Commercial banks' ROE: Empirical Study of Pakistan. *Proceedings of the 2014 International Conference on Information, Business and Education Technology*, 90, 19–22. <https://doi.org/10.2991/ICIBET-14.2014.6>
- 34) Sharma, M., Choubey, A., Sharma, M., & Choubey, A. (2022). Green banking initiatives: a qualitative study on Indian banking sector. *Environment, Development and Sustainability*, 24, 293–319. <https://doi.org/10.1007/s10668-021-01426-9>
- 35) Shihadeh, F. H., Hannon, A. M. T., Guan, J., Ul Haq, I., & Wang, X. (2018). Does financial inclusion improve the banks' performance? Evidence from Jordan. *Research in Finance*, 34, 117–138. <https://doi.org/10.1108/S0196-382120170000034005/FULL/XML>
- 36) Shihadeh, F., & Liu, B. (2019). DOES FINANCIAL INCLUSION INFLUENCE THE BANKS RISK AND PERFORMANCE? EVIDENCE FROM GLOBAL PROSPECTS. *Academy of Accounting and Financial Studies Journal*, 23(3).
- 37) Sumra, S. H., Manzoor, M. K., H. Sumra, H., & Abbas, M. (2011). The Impact of E-Banking on the Profitability of Banks: A Study of Pakistani Banks. *Journal of Public Administration and Governance*, 1(1), 31. <https://doi.org/10.5296/JPAG.V1I1.692>
- 38) UNEP. (2010). *Green Economy Report: A Preview*. <https://plagiarism.repec.org/trica-papuc/trica-papuc3.pdf>
- 39) Wang, Y., Xiuping, S., & Zhang, Q. (2021). Can fintech improve the efficiency of commercial banks? —An analysis based on big data. *Research in International Business and Finance*, 55, 101338. <https://doi.org/10.1016/J.RIBAF.2020.101338>
- 40) Wei, W.-S., Nguyen, M.-T., & Nguyen, P.-H. (2021). Does Loan Growth Impact on Bank Risk? *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.3964586>
- 41) Widarjono, A. (2017). *Ekonometrika Pengantar dan Aplikasinya Disertai Panduan EViews*. STIM YKPN.
- 42) Widyaningsih, N., & Hersugondo, H. (2021). INKLUSI KEUANGAN DAN PROFITABILITAS BANK DI INDONESIA. *Jurnal Ilmu Manajemen Dan Akuntansi Terapan (JIMAT)*, 12(2), 175–189. <https://doi.org/10.36694/JIMAT.V12I2.327>



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Policy Implementation of the Village Building Movement in West Java Province



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ABSTRACT: One of the priorities of the West Java Provincial Government is the Village Development Movement (Village Gate). Gates of the Village is a movement to create an independent village, namely a village that is able to build and empower village communities by optimizing the utilization of all village potential, both natural resources, human resources and village infrastructure, through collaboration between the government, community and other stakeholders. The portrait of the implementation of the village development movement policy has not been effective in supporting the achievement of the target of a champion village in West Java Province, this is still found in the Dominant Poor Population in the Village, more Unemployment in the Village, 18 Villages Still lagging behind in Cianjur, Karawang and Tasikmalaya Regencies and only 50 percent villages implementing the Village Financial System.

This study uses Muchlis Hamdi's theory (2014) with qualitative methods to understand the depth of the problem. This theory does not merely stand alone, it is also compared with other theories as a complement. Data collection methods were carried out through literature studies, field studies (observations), interviews, focus group discussions, and triangulation data analysis. Informants and resource persons were selected based on their competence on issues related to this research issue. All of the instruments used are expected to be able to get good results.

This study found that in addition to the dimensions of productivity, linearity and efficiency of the policy implementation model based on Muchlis Hamdi's theory, a strategy is needed to encourage policy substance, implementing task behavior, network interaction, target group participation, and resources in implementing village development movement policies in the Province West Java. The strategy for implementing the village development movement policy includes elements of collaboration, transparency and innovation. The findings of this study illustrate that in order to create a champion village through the strategy of implementing the village building movement in West Java Province, a Triangel Coltin strategy (collaboration, transparency and innovation) is needed, where the collaboration strategy is carried out using the pentahelix approach by involving academia, the business world, community, government and media . The transfer strategy is to provide education to the community (educate citizen), consult with the community (Delibaretion Partner Community) and always monitor the implemented policies (Monitor Polcies).

KEYWORDS: Policy Implementation and Village Development Movement.

INTRODUCTION

The government's attention to villages is increasing day by day in line with efforts to accelerate the creation of a prosperous society. The government is fully aware that until now the village community has not optimally felt what is the hope and goal of the state, namely a just, prosperous and prosperous society as mandated by the 1945 Constitution. Rural communities have not enjoyed maximum development results, infrastructure such as roads and bridges, inadequate health facilities and services, school buildings, office buildings, religious facilities and so on.

The village is often identified with underdeveloped areas. Development in several fields such as education, health and the economy is still running slowly. This phenomenon occurs due to various factors such as limited infrastructure, human resource capacity which tends to be low and people's economic activities that do not yet have very high added value.

The issues that exist in the village theoretically then give rise to a concept of village development which is often called the Superior and Sustainable Village. Fundamentally Superior and Sustainable Village is a village development concept that uses an urban development approach while maintaining the characteristics and values of village communities (Heap, 2015). One

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approach that can be used in village development is the use of technology applications. Through technology, various development constraints such as limited information, community knowledge and infrastructure can be overcome.

One of the priorities of regional heads supported by DPM-Desa is the Village Development Movement (Gerbang Desa). Gates of the Village is a movement to create an independent village, namely a village that is able to build and empower village communities by optimizing the utilization of all village potential, both natural resources, human resources and village infrastructure, through collaboration between the government, community and other stakeholders. . The purpose of organizing the Village Development Movement (Gerbang Desa) is to realize the achievement of the Village Building Index (IDM) with the objectives of: a) accelerating village development, b) developing village community empowerment, c) developing innovation and collaboration to optimize village potential.¹

The Village Building Movement Program is a development with the concept of a Superior and Sustainable Village implemented in West Java Province, namely the Champion Village Program to answer various problems that exist in the village. Villages in West Java Province are important areas whose welfare must be guaranteed because of the total population of West Java, namely 48,037,827 people in 2018, 34.31% of them live in rural areas. To build the intended commitment and desire according to the duties, roles and functions that must be carried out, the West Java Provincial Government must formulate policies related to the public interest. To realize Champion Village, villages in West Java Province already have some basic capital in the form of resources. The basic capital of these resources is the existence of 51,415 Posyandu Units, 5,957 LPM, PKK, DS/Kel, 2,785 Bumdes, 1,844 Village Markets, 296,855 Poyandu Cadres, 17 thousand Community Empowerment Cadres, 835,476 PKK General Cadres, and 2,929 Village Facilitators. However, the development of the Champion Village program in West Java Province still leaves problems. The condition of poverty in West Java Province is at 7.45% which is a high poverty rate. This poverty condition is also exacerbated by the number of unemployed, which is at 7.45%. Data on poverty and unemployment in West Java Province is dominated by villagers. Not all of the villagers have education above the minimum, namely 65 percent of the villages have residents with education above the minimum.²

Table Potential of Village Community Institutional Resources in West Java Provision

626 SUBDISTRICT	VILLAGE INDEX BUILDING WEST JAVA					
5.312 VILLAGE	586 INDEPENDENT VILLAGE	2.102 ADVANCED VILLAGE	2.606 GROWING VILLAGE	18 DEVELOPED VILLAGE	0 THE VILLAGE IS VERY UNDERWARDED	
645 WARD	VILLAGE CLASIFICATION			VILLAGE DEVELOPMENT LEVEL		
	175 SELF- SWASEMBAD A	936 SWAKARYA	4000 SWADAYA	1.099 GROWING FAST	3286 DEVELOP	940 LESS DEVELOPEMEN T
	51415 UNIT POSYANDU	5957 LPM, PKK, DS/KEL		2785 BUMDES		1844 VILLAGE MARKET
	296.855 POSYANDU CADRES	673 POSYANDU CADRES COMPANION	17.000 COMMUNITY EMPOWERMENT CADRES		835.476 PKK CADRES	

Source: West Java Province Community and Village Empowerment Office, 2021

The level of village development through village classification in West Java Province also shows empirical issues regarding the development of the Village Building Movement program. Village classification shows the level of progress in the village. Villages with underdeveloped classifications have far more complex problems than villages with advanced classifications. The table above shows that of the 5,312 villages in West Java Province, there are 11.03 percent Independent Villages, 39.57 percent Developed Villages, 45.06 percent Developing Villages, and 0.33 percent Disadvantaged Villages.

Based on the background above, several key issues that can be identified are: 1) The percentage of poor population in rural areas in 2021, amounting to 9.76 percent, is dominated by villagers; 2) The number of unemployed is still 8.16% in 2018

¹ Governor of West Java Regulation Number 8 of 2022 Concerning the Organization of Village Building Movements, article 3, page 4

² West Java Province Community and Village Empowerment Service Work Plan, 2021

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which is dominated by villagers; 3) Not all residents have education above the minimum limit, namely 65 percent of villages that have residents with education above the minimum; 4) Not all villages have implemented a village financial information system, namely 50 percent of villages have implemented a village financial information system; 5) Not all villages have Village Owned Enterprises, namely only 2785 Bumdes out of 5312. 6) There are still 18 underdeveloped villages in West Java, namely in Cianjur Regency, Karawang Regency and Tasikmalaya Regency; 7) Movement data to build a village in 2021 is IDR 5,990,622,942,000.-.

The limitation of the problem in this study focuses on the implementation of the Village Development Movement policy in West Java Province based on Regional Regulation of West Java Province Number 8 of 2019 concerning the Regional Medium-Term Development Plan for 2018 – 2023 which contains priority programs, one of which is the Village Development Movement. This research focused on 3 (three) Disadvantaged Villages in Cibuluh Village, Cianjur Regency, Ceramajaya Village, Karawang Regency, and Nagrog Village, Tasikmalaya Regency.

RESEARCH METHODS

The research method used by researchers is descriptive with a qualitative approach. Descriptive research is a writing that describes the actual situation of the object under study, according to the actual situation during direct research, the data collected is not in the form of numbers but the data comes from manuscripts, interviews, field notes, personal documents, memo notes, and other documents. The principle of qualitative research is naturalistic or natural. It is called naturalistic because the research field situation is "natural" or reasonable, as it is without being manipulated, regulated by experiments or tests. This study does not test a hypothesis, but only wants to know the state of the variables independently, does not link one variable to another systematically, therefore the research method uses a qualitative approach.

RESULT AND DISCUSSION

Policy Implementation of the Village Building Movement in West Java Province

The implementation of the Village Building Movement Policy in West Java Province is studied through the dimensions: productivity, linearity, and efficiency. The dimension of policy implementation consists of a series of images (things or circumstances) regarding the dynamics of the movement of policy implementation. This description relates to the dimensions of policy implementation, namely, productivity, linearity and efficiency.

The Village Building Movement is an attempt to overcome the trend of urbanization which has become a classic problem in Indonesia. The benchmark for village development has actually been standardized, but in practice it tends to make it difficult for villages, as expressed by the Head of the Office for Community and Village Empowerment of West Java Province as follows³: Village development performance indicators are directed at increasing the village development index and the achievement of becoming an Independent Village. In practice, developing village indexes is too complicated and takes the village government's time just to do administration. IDM has 3 indicators that come from 3 ministries. The Mandiri Village is expected to be in accordance with the objectives of preparing indicators, namely to become a village that no longer relies on subsidies.

The description/dimensional implementation of the Village Building Movement Policy in West Java Province is described as follows:

Productivity Dimensions

Productivity is the ability of an organization to produce the right quantity and quality of output for its target environment. This includes work output, quality of work, workload, and production time. The productivity of policy implementation in implementing the Village Building Movement policy in West Java Province can be seen in the ability of the West Java Provincial Government to realize the achievement of previously set target standards. The target for the implementation of the Village Building Movement policy in West Java Province for 2019-2023 is set in the West Java Province MD Term Development Plan for the period 2018-2023 and in the target of regional minimum service standards in the field of Community and Village Empowerment.

According to the statement of the Governor of West Java Mr. Ridwan Kamil on March 19 2023: The Champion Village Policy or implementation of the Village Building Movement is a movement of West Java development programs that are integrated with a focus on rural areas by optimizing the utilization of all village potential. The Village Building Movement or Champion Village policies cover economic, educational, health, community empowerment, infrastructure and governance aspects which are expected to be able to reduce poverty and unemployment and improve people's welfare. the consistency of the derivation of policy content in determining the success and failure of the implementation of the policy implementation of the Village

³ Head of the Office of Community and Village Empowerment of West Java Province during the FGD presentation on the Implementation of the Village Building Movement, 12 June 2023.

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Development Movement in West Java Province has been consistently carried out on an ongoing basis and has been in accordance with central policies and City/District policies in West Java Province.⁴

West Java Governor Ridwan Kamil said that many villages in West Java are now becoming champions. At the beginning of his leadership there were 929 villages with underdeveloped status. However, all villages in West Java are no longer underdeveloped villages. In fact, the total number of independent villages increased significantly from 37 to 1,130 villages. "Villages in West Java have become more champions. Out of 929 underdeveloped villages in 2021 after I took office, there are only 18 villages. Independent villages also for three years, initially 37 villages are now 1,130 villages," improving the quality of life of rural communities is important to roll out so that there is no longer a community dichotomy who live in cities and villages.

The West Java Provincial Government's policy strategy for reducing Disadvantaged and Very Disadvantaged Villages, as well as raising the strata of Independent Villages is as follows:

1. The Central Government accommodates the West Java Provincial Government's proposal for affirmation funds to be distributed to the Independent, Advanced, Developing Village strata, so that they are not concentrated on the Disadvantaged and Very Underdeveloped Village strata so that the Village Government is motivated to increase the Village strata;
2. Apart from that, the Provincial Government of West Java provided a stimulus in the form of the Champion Village Aspiration Car (MASKARA) to villages that were able to increase their village level to become Independent.

The productivity of the implementation of the village building movement policy should be a sustainable policy in accordance with the principles of community empowerment so that this policy will be able to affect not only increasing the status of a developing, developed and independent village but in real terms can change the behavior of people who are able to adapt to changing times. This. The facilities and infrastructure owned by the village are still felt to be lacking by the Government and the village community, including roads as a means of community access, there are still many that are not feasible or the condition is still very bad, this is due to the limited development budget owned by the Karawang Regency Government and also For this reason, we really hope that the policy of the village development movement must continue so that our village community has competitiveness like other villages that have been advanced and independent.

Linearity Dimension

Linearity is the conformity of standards in accordance with standard specification guidelines that have been set, including procedures, time, cost, place and implementation. The dimension of linearity in the implementation of policies for implementing the village building movement in West Java Province is related to the conformity of the process of fulfilling the standards set by the West Java Provincial government, this suitability is related to procedures, time, cost, place and implementation of policies for implementing the village building movement in West Java Province . Based on the research results, information was obtained about the standard guidelines for the Village Building Movement, which is a movement for West Java development programs that are integrated with a focus on rural areas by optimizing the utilization of all village potentials. Champion Village includes aspects of the economy, education, health, community empowerment, infrastructure and governance which are expected to be able to reduce poverty and unemployment and improve people's welfare. The policy of the Village Development Movement is a development carried out to build and empower village communities by optimizing the utilization of all village potential.

Efficiency Dimension

The dimension of efficiency in implementing the policy of the movement to build villages in West Java Province is related to the ability of the Regional Government, in this case the community and village empowerment services in implementing the policy of the movement to build villages in West Java Province in empowering resources consisting of executors, assets, funds and technology optimally. Ideally a service will be effective if the service bureaucracy can provide input to the service, the ability to use resources makes it easier for the community to act as service users. As well in terms of service output, the bureaucracy can ideally provide quality service products, especially from the aspect of service accuracy.

Determinant Factors Influencing the Implementation of the Village Building Movement Policy in West Java Province

Policy Substance Determinant Factors

Policy substance relates to policy specifications and other policy alignments. The implementation of the village development movement policy in West Java Province is a program created to accelerate towards an independent village in West Java through a process of updating various resources, so that these resources can have benefits. Innovation is also influenced by the use of technology, because using technology makes it easier to produce new products. Innovation is closely related to cultural renewal and can change behavior patterns in a more positive direction.

⁴ Interview results with the Governor of West Java, March 19, 2023

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Based on the substance of the policy implementation of the village development movement in West Java Province, this is in line with Anderson (1994: 10-22) who distinguishes between substantive policies and procedural policies.⁵ The substantive policies of the development village movement policy concern things that are currently being carried out by the government, such as improving village infrastructure, providing assistance with village technology facilities, social facilities and other facilities. This policy directly distributes benefits or disadvantages, benefits or costs, to society as a whole, groups of people, and individuals. On another dimension, procedural policies are related to determining the ways in which something will be done or who will do it in the implementation of the village building movement. Thus, the procedural policies for village development policies include matters relating to the organization, such as the institution responsible for implementing a regulation, and detailing processes or requirements and procedures related to actions to carry out these responsibilities.

Determinant Factors of Policy Implementer's Behavioral Duties

The government will always be involved, considering that public policy is a policy made by government officials or institutions. In general, all parties involved are referred to as policy actors (policy stakeholders). More concretely, policy actors are all individuals or groups who are involved, either with the role of influencing or with the role of being influenced, in a policy process. Anderson⁶ distinguishes policy actors into two groups. The first group is referred to as formal policy makers, consisting of: legislature, executive and court. The second group is referred to as informal participants, which include: interest groups, political parties, research organizations, mass media, universities, and citizens. Howlett & Ramesh⁷ describes policy actors institutionally, and differentiates them into three institutions, namely the state, society, and international organizations.

With regard to the behavioral characteristics of the executor's task where the implementation of the village building movement policy appears to have shown activity in a structured manner using existing patterns and norms. Rules with the same unit by government institutions under the coordination of the village government under the auspices of the sub-district head have given a strong signal how massive this policy is implemented.

Determinant Factors of Network Work Interaction

One of the urgent factors that influence inter-organizational networks and influences the determination of the implementation of village building movement policies is coordination through network interactions. coordination of network interactions is carried out with cross-sectoral organizations as implementers of the village development movement policy in West Java Province. Coordination is carried out both in terms of decision making, especially in the provision of data and information as well as in terms of implementing activities.

According to Malon quoted by Masl, coordination is the act of managing interdependencies between activities (acts that are interdependence to manage between activities). This understanding indicates that complex activities require coordination so that activities can produce maximum output. Organizational complexity can cause coordination to usually not go as expected.

Determinants of Target Group Participation

The behavior of the target group does not only influence the effect/impact of the policy but also affects the performance of lower-level officials, if the impact is good then the performance of lower-level officials is also good and vice versa. The behavior of the target group includes the positive and negative responses of the community in supporting or not supporting a policy accompanied by good feedback in the form of the target group's response to the policies made. Participation of the target group in the implementation of the village development movement policy will certainly accelerate the success of this policy because the various potentials that exist in the village can play an active role according to their potential.

Resource Determinants

The implementation of the village development movement policy seen from the aspect of resources found that empirically there was compliance in carrying out regulations on efforts to accelerate community development in villages by coordinating with various parties. This policy is easy to implement because it is properly accompanied by an umbrella of administrative law. Standards for achieving policy targets are very measurable so that apparatus resources have no doubts in implementing them because they have good policy standards and facilities. This is reinforced by the opinion of Mazmanian Sebatier (1983) that the policy can be easily implemented when viewed from the characteristics of the problem, where there are some social problems that are technically easy to solve and some are difficult to solve, this has been carried out well. In the aspect of resources as part

⁵ Hamdi, Muchlis, 2014, *Public Policy*, Galua Indonesia, Hal 55

⁶ Anderson, James E. 1994. *Public Policy Making An Introduction Second Edition*. Boston: Houghton Mifflin Company. Hal 54 dan 63

⁷ Howlett, Michael dan Ramesh, M. 1995. *Studying Publik Policy: Policy Cycles and Policy Subsystems*. New York: Oxford University Press. Hal 59-78

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of achieving the performance of implementing the village development movement policy in West Java Province, it can be found in the field with the illustration that all elements of successful policies can be easily implemented.

Factors Inhibiting the Implementation of the Village Building Movement Policy

The results of interviews with three village heads and several informants indicated that there were three inhibiting factors that influenced readiness to accept village development movement policies, namely the timing factor, regulatory factor, and precautionary factor. These factors have a correlation with each other, and significantly contribute to institutional readiness, HR readiness and program readiness.

1) Time Factor

The time factor is indeed a determining factor why the policy of the village building movement is resistant to implementation and is resistant to the goals of development and empowerment of village communities. suddenly, even though the village was institutionally not ready, the human resources were not ready, neither was the program ready. As a result of this unpreparedness, planning is not of good quality in terms of mechanisms and participation, nor is quality in terms of policy outputs such as targets and goals that are far from the wishes and expectations of the people. Secondly, the time considered by the village heads was very limited because the program had not yet been completed, a program implementation schedule had to be implemented, and then the report was immediately included. This is all that is complained about by the village heads where time is very influential on the implementation of the village building movement program.

Edwards⁸ justifies the statement above that policy implementation should be preceded by "preconditions", what kind of readiness the implementer or implementer of the policy is, and what kind of obstacles will likely occur in the field. Pre-conditioning can be done in the form of outreach, education and training in order to obtain a common perception and common action. It must be realized that implementing policies in the field is not as easy as turning the palm of the hand, in fact implementation is often more difficult than when carrying out the policy formulation itself. In this regard, Edward again argued that the first requirement for effective policy implementation is that those who carry out decisions must know what they have to do. Decisions must be forwarded to the appropriate personnel before the decision can be followed, of course the communication must be accurate and must be carefully understood by the implementers.

2) Regulatory Factors

Regulatory factors also contribute to institutional readiness, HR readiness and program readiness. Regulations in the form of laws and regulations should be a guide and controller in managing the implementation of the village development movement in West Java Province, but in some cases they have become obstacles, caused by frequent changes, overlapping policies, and difficulties for implementers in the field to understand. In mid-2022 the West Java Provincial Government issued a policy in the form of Governor Regulation No. 8 of 2022 concerning the implementation of the village building movement which is expected to better prepare for the implementation of the village building movement policy in 2023 with the target of no more underdeveloped villages in West Java.

According to Edwards⁹, a policy that changes frequently and is not consistent will give rise to its own problems in implementation, at least there will be delays, not wholeheartedly, and there is even a fear of implementing it. Edwards' statement above is very similar to the experiences of four village heads in managing village development movements. One of the problems is how often the rules change, today the regulations allow it, tomorrow and the day after it prohibits it.

Cibuluh Village, Cidaun District, Cianjur Regency is one of the villages that complains how regulations are often inconsistent, so that the dismantling program is allowed today, tomorrow it is not allowed. According to the head of Cibuluh village, they are afraid of things like this, lest they get trapped. If it's already been funded, it turns out there's a new rule that says it's not allowed, it's a problem. What was stated by the head of Cibuluh village above, it appears that regulatory factors contributed to the implementation of village building movement policies, especially when making programs, as well as during implementation and reporting. Regulations that often change make village heads doubtful and even afraid, they are afraid of being caught by the law.

Furthermore, it was stated again that policy implementation often fails because the content of the policy is still vague, meaning that the objectives are not detailed enough, the means and implementation of priorities, or the policy programs are too general or nonexistent. Furthermore due to the lack of internal and external determination of the policies to be implemented and due to deficiencies concerning supporting resources, time, costs/funds and human resources.

⁸ Edward III, George C. (1980). *Implementing Public Policy*. Washington DC: Congressional Quarterly Press

⁹ Edward III, George C. (1980)

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3) The precautionary factor

The implementation of the village building movement policy is one of the strategic programs of the West Java Provincial Government, and often becomes a trending topic in several media. Every time the village building movement policy is displayed, the public's attention is always focused on knowing what the village development movement looks like and how it is progressing. What is most interesting is the expectation of the community and the central government that this village building movement will truly benefit the community, not be misdirected, and not even corrupted. The three village heads interviewed indicated that in fact there was an impression of being unprepared to accept the implementation of the village development movement and increasing the status of a backward village to a developing, advanced and independent village, because there was still an assumption that if the status of a village was already developed, advanced, let alone independent, it would no longer receive assistance from Central and provincial government.

Regarding the caution of the village heads, doubts and even fear, it is understandable, this is what gave birth to the idea of the Governor of West Java to anticipate so that the doubts and fears can disappear and the village heads can work with confidence. This anticipation is carried out through training, mentoring and outreach to the program, as well as the Central Government accommodating the West Java Provincial Government's proposal for affirmation funds to be distributed to strata of Independent, Advanced, Developing Villages, so that they are not concentrated on the Disadvantaged and Very Underdeveloped Village strata so that the Village Government is motivated to increasing village strata, besides that the West Java Provincial Government also provided a stimulus in the form of the Champion Village Aspiration Car (MASKARA) to villages that were able to increase their village strata to become Independent

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Institutional readiness

The three villages as targets for the implementation of the village building movement policy until 2021, as previously described, are actually not ready, even though each of them already has institutions formed both by the government and by the community. These institutions are the village government institution itself, the Village Consultative institutions and Village Community Institutions, Village Customary Institutions, Village Cooperation Agency, and Village Owned Enterprises.

Institutional readiness can be seen in two things, the first is that each of these institutions has not yet functioned in planning or implementing village building movement policies, the second is that institutions such as Village-Owned Enterprises are not yet optimal when village building movement policies are implemented, even though these institutions which should be a forum for community empowerment.

Institutional aspects that are not ready have a domino effect on other aspects, for example the participation aspect, the independence aspect, the target aspect, even though these are the main objectives of the village development movement. The institutional aspect that was not ready resulted in the creation of programs that did not go through the deliberation mechanism which is usually carried out at the sub-village level to the village level. Even though it is at the deliberations that the Village Consultative Institutions, Village Government, and community elements organized by the Village Consultative Institutions meet to agree on strategic matters.

Programme Readiness

Program readiness is one of the things that gets attention when the village building movement is rolled out, the problem is not only what program will be made but how the mechanism for making the program is, as well as regarding the technique of making it. As it is known that the program must be in touch with two main activities namely development and empowerment. What development will be made and what type of empowerment will be carried out. Besides that, what kind of mechanism should be carried out and how to carry out the mechanism, everything has a procedure so that the program is not automatically created even though it is considered conditional. In addition, the program must also be listed in the Regional Medium-Term Development Plan and included in the Village-Development Work Plan, and what is no less important is that the program must be timely and of course with clear rules.

The results of interviews with the head of Cibuluh Village, Cidaun District, said:¹⁰

That the implementation of the Village Building Movement in us requires relatively hard work because we have to adjust to the targets set, one of which is that our IDM must become a developing village, even though our infrastructure is still very concerning, especially if one of the targets for our village is a digital village, how come the internet network is still very difficult for us.

¹⁰ Results of Interview with the Head of Cibulu Village on 23 February 2023

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When the village building movement policy was implemented, it was realized that it was far from a mechanism, which should have involved community participation but that was not done because time and the people in it were not contacted, as a result the program that was made was not in accordance with the wishes and needs of the local community, the program was made more because of the instructions from above, therefore in making a program let alone implementing it there must be preconditions. In this regard, Edwards argues that policy implementation should be preceded by "preconditions", such as the readiness of the implementer or implementor of the policy, and what kind of obstacles will hinder the policy. According to him, there are four crucial factors or variables in the implementation of public policy, namely communication, sources, tendencies or behavior and bureaucratic structure.

Readiness of Human Resources

The readiness of Human Resources is indeed one of the obstacles in the implementation of the village development movement policy. The readiness of human resources is an inseparable link with institutional and program readiness. This means that if institutions are not functioning properly, as well as programs that are not of good quality, then the cause is easy to suspect because of limited human resources, that is why Robbins (2004) suggests that institutions are boundaries about the behavioral unit of people who are in an organization, interact with each other. in carrying out tasks and activities to achieve organizational goals. The essence of institutional theory is to regulate and organize the behavior of institutionalized people to achieve institutional goals.

There were 3 villages that received assistance from the village development movement, all of whom complained about the limited human resources, especially when it was related to the volume, time and type of work being carried out. The movement to build a village, which was originally considered to be sustenance for development and society, has actually become a problem because the programs that will be made are all in touch with technological capabilities, good planning, accurate calculations, careful legal analysis, all of this requires intelligent and skilled human resources, but the problem is that the village doesn't have human resources like that, so what happens is work as best it can, what's important is that it meets the minimum standards, because it can't be done - it has to be done.

SOAR Strategy (strength, opportunities, aspiration, result) in the Implementation of the Village Building Movement Policy in West Java Province

The results of the SOAR analysis conducted by the researchers were based on the identification of the four factors in SOAR that described the best fit in the strengths and outcomes quadrants. This analysis is based on the assumption that a strategy will maximize strengths and expectations, and maximize opportunities and outcomes.

After carrying out a combination of the SOAR matrix strategies, then making a model analysis as the basis for the total score on each factor in the SR strategy. The ranking of the strategy values in each quadrant is obtained by adding up the total score generated in the EFAS matrix, so that the values obtained for each strategy are as follows:

Total SA strategy score: $3.35+3.32 = 6.67$

Total OA strategy score: $3.34+3.35 = 6.69$

Total SR strategy score: $3.35+3.43 = 6.78$

Total OR strategy score: $3.34+3.43 = 6.77$

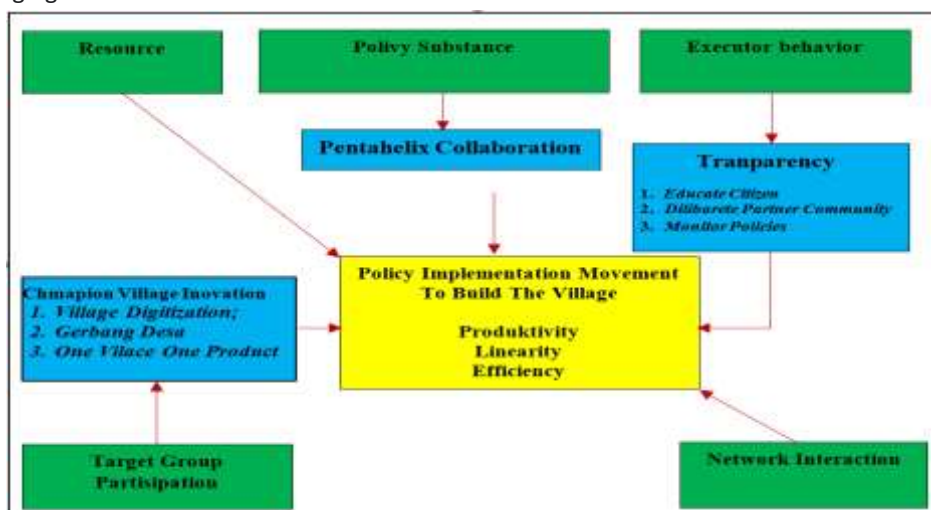
From the strategy combination matrix that is generated based on the calculations that have been done. The strategy combination matrix is the SR Strategy, OR Strategy, SA Strategy and OA Strategy. Based on the acquisition of scores in each strategy quadrant, the SR strategy is the strategy that obtains the highest score, namely 6.78. This shows that the opportunity strategy that can be applied in the implementation of the village building movement policy in West Java Province is the SR strategy followed by the OR strategy in second place with a score of 6.77. Furthermore, the OA strategy is ranked third with a score of 6.69 and the last is the SA strategy with a score of 6.67. The strategy that has the highest value is the SR strategy, while the strategy that has the lowest value is SA. Thus, at this time the most appropriate strategy applied for the implementation of village building movement policies in West Java Province is the SR strategy, which is oriented towards using force to achieve results, namely by: 1) Collaboration in community empowerment, 2) Increasing apparatus resources, 3) Increasing village community participation, 4) Regulatory support must be implemented in a village development movement budget policy that is managed in a transparent manner.

Novelty

Based on the results of the research that has been described, the researchers formulated the implementation of the Village Development Movement policy in West Java Province and is in line with Muclis Hamdi's (2014) policy implementation theory with three dimensions namely productivity, linearity and efficiency. The policy implementation model of Muchlis Hamdi (2014) is still

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relevant for use, only in research on the implementation of the village building movement policy in West Java Province the policy implementation model is added with approaches of collaboration, participation and transparency as a theoretical novelty as shown in the following figure:



Picture Findings of Research Implementation of Village Building Movement Policy in West Java Province
Source: Research Results 2023

Furthermore, the researchers tried to provide alternative solutions to the West Java Provincial Government through an effective strategy for implementing the village building movement policy in West Java Province through strategies for increasing collaboration, program transparency and increasing community participation in the implementation of the village building movement policy in West Java Province.

1. Strategy to increase collaboration

Of course, the implementation of the village development movement policy in West Java Province will not be much related to the role of interest actors in the collaboration process. The actors who play a role in collaborative activities, whether carried out between several stakeholders or multiple stakeholders, we often hear of as Stakeholders. Stakeholders themselves exist because of the desire or interest between several collaborative actors who have the same goals and desires on the basis of the benefits obtained in the process of collaborative activities carried out. In the collaborative governance process activities carried out between several interest actors usually involve the government as a facilitator, the private sector as a supporting actor and the community as implementing actors implementing the village development movement policy in West Java Province. The West Java provincial government has a central role, namely as a facilitator as described in the technical guidelines for community empowerment programs in West Java Province. In addition to acting as a facilitator in the collaboration process, the Provincial Government of West Java, in this case the Office of Community and Village Empowerment of West Java Province, is also obliged to provide program assistance to the community it fosters and to community movements technically according to the types of activities that are related to technical work units.

2. Transparency Strategy

The implementation of community policies is a key success factor that makes transparency of public information that runs in one area false or not, long-lived or not, so that various steps and approaches are taken to empower the community in an effort to create transparency of public information related to the program. Transparency is carried out mainly by executors from public authorities in opening budget implementation documents to the public who are directly involved in the implementation of empowerment policies in West Java Province. Transparency of policy implementation must be accompanied by education for the public (educate cooperative) so that they can understand the regulations in program implementation so that the community can adjust between budget implementation documents and the types of activities proposed by the community. Apart from that, open data on the implementation of the village development movement policy in West Java Province must be carried out so that the community understands the stages of activity and also which activities can or cannot be carried out. Furthermore, the last element of transparency must be carried out when monitoring by policy implementers to the community so that the implementation of the village development movement policy in West Java Province is in accordance with mutually agreed rules. These transparency measures can be carried out by taking advantage of advances in information technology, where everyone can get information, both information regarding program implementation and policies, through the facilities owned by the community, namely

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cellphones, which now almost all people have. Furthermore, transparency for monitoring as well as a means of accommodating the aspirations of the community's village development movement policies can have various information systems owned in the village so that village communities can obtain complete information and can provide suggestions and input for good in the future. Here's an overview of the transparency of the movement's policy implementation building villages in West Java Province:

3. Champion Village Innovation Improvement Strategy

The strategy for increasing champion village innovation in the implementation of the village building movement policy in West Java Province is to increase community involvement in all stages of the program, from planning, implementation, evaluation and maintenance of the program so that the program can run effectively by producing as expected. Government programs that have been implemented will be redundant if there is no awareness, support and participation from the community so that active participation is needed from all participants to always work hard to solve village community problems because awareness and community hard work is the main key to the success of these programs. the. As a strategy for increasing innovation to create champion villages in West Java Province consisting of: One Village One Village Business Entity, One Village One Company (OVOC), Village Advocacy, Village Patriot, CEO of Village Business Entity, Champion Posyandu: Integrated Service Post which can organize the need for basic social services and the development of the quality of human resources and community-based family resilience with multifunctional Mandiri Posyandu strata, Champion Village Schools, Digital Villages, Tourism Villages, Greet Residents, Champion Village Alert Cars (MASKARA), Improvement of rural infrastructure.

CONCLUSION

Based on the results of the discussion of data processing, the following conclusions can be drawn:

- 1) The village building movement policy has been implemented in all districts in West Java, indicated by a decrease in the number of underdeveloped villages and developing villages in West Java Province, and increased to become developed villages and independent villages.
- 2) The dimensions of implementing village development movement policies include productivity, linearity, and efficiency. From a productivity standpoint, the implementation of the village building movement policy is still constrained by limited facilities and infrastructure as a result of the district government's limited budget as the executor of this implementation. The linearity dimension is reflected in the fulfillment of the standard guidelines for the village building movement which are elaborated into the Champion Village program, covering aspects of the economy, education, health, community empowerment, infrastructure and governance. Meanwhile, the dimension of efficiency is reflected in the ability of the Regional Government through the Office of Community and Village Empowerment in implementing the village development movement policy in West Java Province. Implementation efficiency has been achieved as indicated by the optimum role of executor, utilization of assets, funds and technology.
- 3) Implementation of village development movement policies is influenced by factors of institutional readiness, program readiness, and human resource readiness. There are three dominant factors that influence the readiness of policy recipients in implementing the village development movement; time, regulation, and caution. In its implementation, sufficient time is often an obstacle in policy implementation. Policies that are often perceived as inconsistent (often changing), redundancy (overlapping), and difficulties in understanding at the level of policy implementers are also obstacles in policy implementation.
- 4) SOAR analysis related to the implementation of the village building movement policy resulted in strategic priorities, namely strategies for increasing collaboration, strategies for increasing transparency and strategies for increasing village innovation.

REFERENCES

- 1) Abdu-Raheem, K. A. (2021). Preparedness for paid-and self-employment: perceptions amongst Ekiti State University agricultural students, Nigeria. *Higher Education, Skills and Work-Based Learning*.
- 2) Alom, M. M. (2018). Proactive transparency and outward accountability of frontline public bureaucracies: An integrated model. *International Journal of Productivity and Performance Management*.
- 3) Antikainen, M., Uusitalo, T., & Kivikytö-Reponen, P. (2018). Digitalisation as an enabler of circular economy. *Procedia CIRP*, 73, 45-49.
- 4) Arundel, A., Bloch, C., & Ferguson, B. (2019). Advancing innovation in the public sector: Aligning innovation measurement with policy goals. *Research Policy*, 48(3), 789-798.
- 5) Atmowardoyo, H. (2018). Research methods in TEFL studies: Descriptive research, case study, error analysis, and R & D. *Journal of Language Teaching and Research*, 9(1), 197-204.

Policy Implementation of the Village Building Movement in West Java Province

- 6) Barmeyer, C., Mayrhofer, U., & Würfl, K. (2019). Informal information flows in organizations: The role of the Italian coffee break. *International Business Review*, 28(4), 796-801.
- 7) Beausoleil, A. M. (2018). Revisiting Rogers: the diffusion of his innovation development process as a normative framework for innovation managers, students and scholars. *Journal of Innovation Management*, 6(4), 73-97.
- 8) Benotsmame, R., Kovács, G., & Dudás, L. (2019). Economic, social impacts and operation of smart factories in Industry 4.0 focusing on simulation and artificial intelligence of collaborating robots. *Social Sciences*, 8(5), 143.
- 9) Boukamel, O., & Emery, Y. (2017). Evolution of organizational ambidexterity in the public sector and current challenges of innovation capabilities. *The Innovation Journal: The Public Sector Innovation Journal*, 2(22).
- 10) Caiado, R. G. G., Leal Filho, W., Quelhas, O. L. G., de Mattos Nascimento, D. L., & Ávila, L. V. (2018). A literature-based review on potentials and constraints in the implementation of the sustainable development goals. *Journal of cleaner production*, 198, 1276-1288.
- 11) Carayannis, E.G & Campbell, D.F.J. (2010). Triple helix, quadruple helix and quintuple helix and how do knowledge, innovation and environment relate to each other? *International Journal of Social Ecology and Sustainable Development*, Vol. 1 No. 1, 41-69.
- 12) Carayannis, E.G., Barth, T.D. & Campbell, D.F.J. (2012). The Quintuple Helix innovation model: global warming as a challenge and driver for innovation. *Journal of Innovation and Entrepreneurship*, Vol. 1 No. 1, 1-12.
- 13) Chaudhuri, S., Roy, M., McDonald, L. M., & Emendack, Y. (2021). Reflections on farmers' social networks: a means for sustainable agricultural development?. *Environment, Development and Sustainability*, 23(3), 2973-3008.
- 14) Chen, J., Walker, R. M., & Sawhney, M. (2020). Public service innovation: a typology. *Public Management Review*, 22(11), 1674-1695.
- 15) Cohen, S. & Elmicke, W. 1998. *Tools for Innovators: Creative Strategies for Managing Public Sector Organizations*. San Francisco: Jossey-Bass
- 16) De Silva, M., Howells, J., & Meyer, M. (2018). Innovation intermediaries and collaboration: Knowledge-based practices and internal value creation. *Research Policy*, 47(1), 70-87.
- 17) Divisekera, S., & Nguyen, V. K. (2018). Determinants of innovation in tourism evidence from Australia. *Tourism Management*, 67, 157-167.
- 18) Francisco, K., & Swanson, D. (2018). The supply chain has no clothes: Technology adoption of blockchain for supply chain transparency. *Logistics*, 2(1), 2.
- 19) Fu, P. (2021). From bottom-up to top-down: governance, institutionalisation, and innovation in Chinese makerspaces. *Technology Analysis & Strategic Management*, 33(10), 1226-1241.
- 20) Geels, F. W. (2019). Socio-technical transitions to sustainability: a review of criticisms and elaborations of the Multi-Level Perspective. *Current Opinion in Environmental Sustainability*, 39, 187-201.
- 21) Gimenez-Fernandez, E., Abril, C., Breuer, H., & Gudiksen, S. (2021). Gamification approaches for open innovation implementation: A conceptual framework. *Creativity and Innovation Management*, 30(3), 455-474.
- 22) Globocnik, D., Rauter, R., & Baumgartner, R. J. (2020). Synergy or conflict? The relationships among organisational culture, sustainability-related innovation performance, and economic innovation performance. *International Journal of Innovation Management*, 24(01), 2050004.
- 23) Goertzen, M. J. (2017). Introduction to quantitative research and data. *Library Technology Reports*, 53(4), 12-18.
- 24) Halvorsen, T., Hauknes, J., Miles, I., & Røste, R. (2005). On innovation in the public sector. HALVORSEN, T.; HAUKNES, J.; MILES, I. On the differences between public and private sector innovation. Oslo: NIFU STEP, 2-21.
- 25) Hamdi, M. 2014. *Kebijakan Publik; Proses Analisis dan Partisipasi*. Bogor: Ghalia Indonesia.
- 26) Hartley, J. 2005. "Innovation in Governance and Public Services: Past and Present". *Public Money and Management*. January, Blackwell Publishing.
- 27) INDOPOV. 2007. *Inovasi Pelayanan Pro-Miskin: Sembilan Studi Kasus di Indonesia*. The World Bank: Poverty Reduction and Economic Management Unit East Asia and Pacific Region.
- 28) Keiningham, T., Aksoy, L., Bruce, H. L., Cadet, F., Clennell, N., Hodgkinson, I. R., & Kearney, T. (2020). Customer experience driven business model innovation. *Journal of Business Research*, 116, 431-440.
- 29) Kellehear, A. (2020). *The unobtrusive researcher: A guide to methods*. Routledge.
- 30) Lee, H. J., Kim, M. Y., Park, S. M., & Robertson, P. J. (2020). Public service motivation and innovation in the Korean and Chinese public sectors: Exploring the role of Confucian values and social capital. *International Public Management Journal*, 23(4), 496-534.

Policy Implementation of the Village Building Movement in West Java Province

- 31) López-López, V., Iglesias-Antelo, S., Vázquez-Sanmartín, A., Connolly, R., & Bannister, F. (2018). E-Government, transparency & reputation: an empirical study of Spanish local government. *Information Systems Management*, 35(4), 276-293.
- 32) Lütjen, H., Schultz, C., Tietze, F., & Urmetzer, F. (2019). Managing ecosystems for service innovation: A dynamic capability view. *Journal of Business Research*, 104, 506-519.
- 33) McGann, M., Blomkamp, E., & Lewis, J. M. (2018). The rise of public sector innovation labs: experiments in design thinking for policy. *Policy Sciences*, 51(3), 249-267.
- 34) Morita, K., Okitasari, M., & Masuda, H. (2020). Analysis of national and local governance systems to achieve the sustainable development goals: case studies of Japan and Indonesia. *Sustainability Science*, 15(1), 179-202.
- 35) Moşteanu, N. R., & Faccia, A. (2020). Digital Systems and New Challenges of Financial Management—FinTech, XBRL, Blockchain and Cryptocurrencies. *Quality-Access to Success Journal*, 21(174), 159-166.
- 36) Mulgan, G., & Albury, D. (2003). Innovation in the public sector. Strategy Unit, Cabinet Office, 1(1), 40.
- 37) Muluk, Khairul. 2008. Knowledge Management; Kunci Sukses Inovasi Pemerintahan Daerah. Malang: Bayu Media.
- 38) Najafi-Tavani, S., Najafi-Tavani, Z., Naudé, P., Oghazi, P., & Zeynaloo, E. (2018). How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive capacity. *Industrial marketing management*, 73, 193-205.
- 39) Oeij, P. R., Van Der Torre, W., Vaas, F., & Dhondt, S. (2019). Understanding social innovation as an innovation process: Applying the innovation journey model. *Journal of Business Research*, 101, 243-254.
- 40) Petrus, C. M. M. A. L., & Djani, K. W. (2020). Innovation of Local Governance in Educational Affairs in Kupang City Province East Nusa Tenggara. *Innovation*, 11(5).
- 41) Ribeiro, A., Liliwari, A., Gana, F., & Djani, W. (2021). Public Administration Consolidation And Innovation In The Ministry Of Education And Culture Of The Republic Of Democracy Timor Leste (Case Studies In Central Inffordepe, Baucau And Viqueque Regions). *Psychology and Education Journal*, 58(5), 860-875.
- 42) Rogers, E. M., & Shoemaker, F. F. (1971). *Communication of Innovations; A Cross-Cultural Approach*.
- 43) Rosselló Villalonga, J. (2018). Fiscal centralization: a remedy for corruption?. *SERIEs-Journal of the Spanish Economic Association*, 9(4), 457-474.
- 44) Setiawan, A. D. (2020). The influence of national culture on responsible innovation: A case of CO2 utilisation in Indonesia. *Technology in Society*, 62, 101306.
- 45) Shan, S., Ahmad, M., Tan, Z., Adebayo, T. S., Li, R. Y. M., & Kirikkaleli, D. (2021). The role of energy prices and non-linear fiscal decentralization in limiting carbon emissions: Tracking environmental sustainability. *Energy*, 234, 121243.
- 46) Suh, J., Harrington, J., & Goodman, D. (2018). Understanding the link between organizational communication and innovation: An examination of public, nonprofit, and for-profit organizations in South Korea. *Public Personnel Management*, 47(2), 217-244.
- 47) Taylor, A., Santiago, F., & Hynes, R. (2019). Relationships among leadership, organizational culture, and support for innovation. In *Effective and creative leadership in diverse workforces* (pp. 11-42). Palgrave Macmillan, Cham.
- 48) Toni, M., Renzi, M. F., & Mattia, G. (2018). Understanding the link between collaborative economy and sustainable behaviour: An empirical investigation. *Journal of Cleaner Production*, 172, 4467-4477.
- 49) Torfing, J. (2019). Collaborative innovation in the public sector: The argument. *Public Management Review*, 21(1), 1-11.
- 50) van Buuren, A., Lewis, J. M., Guy Peters, B., & Voorberg, W. (2020). Improving public policy and administration: exploring the potential of design. *Policy & Politics*, 48(1), 3-19.
- 51) Wagner, E. R., & Hansen, E. N. (2005). Innovation in large versus small companies: insights from the US wood products industry. *Management decision*.
- 52) Windrum, P. (2008). Innovation and entrepreneurship in public services. *Innovation in public sector services: Entrepreneurship, creativity and management*, 3-20.
- 53) Wojtaszek, H., & Miciuła, I. (2019). Analysis of factors giving the opportunity for implementation of innovations on the example of manufacturing enterprises in the Silesian province. *Sustainability*, 11(20), 5850.
- 54) Zadek, S., & Raynard, P. (2017). Partnership alchemy: Engagement, innovation and governance. In *tomorrow's history* (pp. 253-266). Routledge.



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Strategy and Strategic Management Accounting: A Study of Enterprises In Hanoi



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ABSTRACT: In a globally competitive business environment, each company must have its own unique strategy to succeed. Strategic management accounting information helps managers determine the strategy and strategic position of the enterprise. In recent years, the number of enterprises in Hanoi has been constantly increasing and participating in all fields and business lines. This shows that businesses operate in a highly competitive environment. Research results from 125 enterprises in Hanoi have shown that all surveyed subjects are aware of the importance of strategic management accounting information. The survey results also support the hypothesis that there is a relationship between the types of strategies and the use of strategic management accounting techniques, including the groups strategic costing, strategic decision making, competitor competitor accounting, customer accounting.

KEYWORDS: Strategy, strategic management accounting, relationships.

1. INTRODUCTION

In a globally competitive business environment, each company must have its own unique strategy to succeed. A company can only be successful if it creates a reason for customers to choose its products or services over the choices of its competitors. In each business in each period, the administrator will choose a strategy to suit the business's operational goals. Strategic management accounting information helps managers determine the strategy and strategic position of the enterprise by the related techniques that consider external factors such as the competitive environment (Simmond, 1981). To cope with the global competitive conditions, enterprises manifest in their strategic purpose and define their strategy. Strategic management accounting information helps managers have enough planning basis. Planning is considered a core function, helping managers analyze and forecast key issues, limit possible risks with the lowest damage. Therefore, information from strategic management accounting techniques clearly provides for each object that managers need to plan, short-term or long-term planning.

According to the results of the economic census and the administrative survey in 2022, there are more than 155,000 enterprises in Hanoi, an increase of over 30% compared to the 2017 economic census. Enterprises in Hanoi are constantly growing and participating in all fields and business lines. This shows that businesses operate in a highly competitive environment. Each business itself needs to have different strategies to attract customers and towards sustainable development. Enterprise managers need to be provided with appropriate and effective information for businesses to implement their strategies. Strategic management accounting techniques are an important source of information for managers in a fiercely competitive environment. The question is, currently, what operational strategies do businesses choose, do different strategies affect the use of strategic management accounting techniques? This article aims to explore the relationship between strategies and the application of strategic management accounting in enterprises in Hanoi.

2. LITERATURE REVIEW

According to Garrison et al. (2015), in a global competitive environment, every business needs a strategy to succeed. Strategy helps businesses attract customers by setting themselves apart from the competition. At the heart of a company's strategy is its target customers. Garrison et al. (2015) pointed out that there are three types of corporate strategies, including customer-friendly strategies, operational excellence strategies, and product leadership strategies. For companies that choose a customer-friendly strategy, they want to send a message to their target customers that they understand and respond to customer needs better than their competitors. For companies that opt for a strategy of operational excellence, it means they deliver products faster, more

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conveniently, and at a lower cost than their competitors. For companies pursuing a product leadership strategy, they are telling their customers that their product is a superior quality product compared to the competition.

According to Simmonds (1981), strategic management accounting is a tool to align accounting with strategy by emphasizing the external aspect, focusing on competitor information. Bromwich and Bhimani (1994) argue that strategic management accounting provides and analyzes financial information about a firm's product market, competitor costs, cost structure, monitor the strategies of the business and its competitors in the market in several stages. Roslender and Hart (2003) have defined strategic management accounting as a general accounting approach to strategic positionin, trying to integrate content from management accounting and marketing management within the framework of strategic management.

Strategic management accounting is researched and developed continuously, due to the need for information for the purpose of implementing the enterprise's strategy. Strategic management accounting helps to convey and orient information to support managers to perform effective strategic management functions, make timely and accurate decisions. Strategic management accounting provides clear information for each object that managers need to plan, short-term or long-term planning. In addition, management accounting information will be oriented according to the needs of managers to compare and evaluate for effective control and review.

Initially, strategic management accounting techniques appeared and applied individually as an immediate solution, supporting managers. For example, technical groups related to costs and competitors (Bromwich, 1981; Guilding et al., 2000) and when Roslender & Hart (2003) extended the link between management accounting and further management marketing to enhance the marketing aspect of the strategic management accounting concept. Guliding et al. (2000) identified 12 management accounting techniques to ensure: Environmental or marketing orientation, focus on competitors and long-term orientation towards the future. The number of these sets was further increased when Cinquini & Tecnucci (2007) studied and applied 14 techniques. Cadez & Guilding (2008) increased this number to 16 techniques divided into 5 different groups in the study of more than 500 large-scale enterprises of various sectors in Slovenia. Another aspect is also concerned when the growth rate of production scale of companies has caused environmental pollution, requiring companies to be responsible for environmental protection. At that time, environmental information also needs to be managed and become part of a company's long-term strategy (Smith et al., 1997; Tanc, 2015). Therefore, environmental management accounting was born as an additional piece for the set of strategic management accounting techniques. Since then, some researchers are talking about increasing the number of strategic management accounting techniques to 18 techniques, divided into six groups: costing, planning, control and performance measurement, strategic decision making, competitor accounting, customer accounting, and environmental management accounting.

3. RESEARCH METHOD

The research method was carried out combining qualitative and quantitative research.

Qualitative research aims to learn about assessing the importance of strategic management accounting for managers. Qualitative research is used through in-depth interview technique. The interviewees were 10 directors and deputy directors at enterprises in Hanoi.

Quantitative research aims to assess the level of application of various types of strategies in enterprises and examine the relationship between the type of strategy the company is implementing and strategic management accounting techniques. Quantitative research was carried out through the following three steps:

Step 1: We build a questionnaire on Google Forms, send it to accountants and business managers via email using a convenient sampling method, and send it to friends, relatives, and partners. ...

Step 2: The number of survey questionnaires distributed was 140, sent to 140 enterprises, and the number of votes collected was 125 from 125 enterprises. All receipts met the required information requirements. The characteristics of the survey sample are shown in Table 1. Most of the surveyed companies are joint stock companies, with fewer than 200 employees, and less than 20 billion VND in business capital.

Step 3: We analyzed the data on SPSS 22 software with the following tools: Frequency statistics, mean statistics and Chi-squared tests.

Hypotheses are developed to assume the relationship between the independent variable (strategic type) and the dependent variable (strategic management accounting technique):

H0: There is an independent relationship between the strategy and the use of strategic management accounting techniques

H1: There is a relationship between strategy and the use of strategic management accounting techniques

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Table 1. Characteristics of surveyed enterprises

Characteristics		N = 125	Percentage (%)
Type	Joint Stock Company	82	66%
	Limited liability company	43	34%
Number of employees	< 10 persons	16	13%
	10- 200 persons	70	56%
	200-300 persons	23	18%
	> 300 persons	16	13%
Capital	< 20 billion VND	95	76%
	20 – 100 billion VND	21	17%
	> 100 billion VND	9	7%

4. RESULTS

Recognizing the importance of strategic management accounting in enterprises in Hanoi

The results of the interviews with the subjects showed that: All the interviewees said that strategic management accounting is an important management tool. All interviewed enterprises are applying strategic management accounting techniques to provide information to managers. However, many interviewees do not understand all the techniques of strategic management accounting. In 10 interviews, the main ideas were summarized as follows:

"In my opinion, strategic management accounting is very important in providing information to managers. My company uses a number of strategic management accounting techniques such as target costing, competitor cost assessment, and I find this information essential to me." (Director, interview)

"I think using strategic management accounting techniques is necessary in businesses, especially businesses operating in a highly competitive environment. The information provided by strategic management accounting is important information for managers to help business managers monitor business strategies." (Director, interview)

"Strategic management accounting information helps me determine the strategy and strategic position of the business because the related techniques have considered external factors such as the competitive environment. At the same time, I can identify risks so that I can have a mitigation plan or an action plan during the implementation of the strategy" (Director, interview)

"I find strategic management accounting information very important. I use strategic management accounting information to help me make decisions on a daily basis. However, some of the strategic management accounting techniques that you mentioned, I have no knowledge of, such as assessing customers as assets or life cycle costs or attribute costs" (Director, interview)

Assess the level of use of various types of strategies in the enterprise

The author surveys the strategies businesses are implementing in the current period. All three types of strategies are being produced in Hanoi, but to varying degrees. The customer-friendly strategy is the strategy chosen by many businesses. The strategy of leading in quality is the strategy chosen by few businesses. This data is shown in Table 2.

Table 2. Corporate strategy

	Frequency	Percent	Valid Percent	Cumulative Percent
Operational excellence strategy	39	31.2	31.2	31.2
Customer-friendly strategy	60	48.0	48.0	79.2
Strategy to lead in quality	26	20.8	20.8	100.0
Total	125	100.0	100.0	

A comparison of SMA techniques used by the companies on the three strategy types: Results of Chi Square test analysis

The relationship between types of strategies (Operational excellence strategy, Customer-friendly strategy, Strategy to lead in quality) and the use of 5 groups of strategic management accounting techniques (Strategic costing; Strategic planning, control and performance measurement; Strategic decision making; Accounting Competitor Accounting; Customer Accounting) is considered through the chi-square test.

In the relationship between strategy types and cost engineering groups, the value of Chi-Square = 20,171 and Sig. = 0.000. This shows that the difference in the types of strategies and the level of use of cost techniques in strategic management accounting is significant with 99% confidence.

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In the relationship between types of strategy and Strategic planning, control and performance measurement, the value of Chi-Square = 1.814 and Sig. = .404. This shows that there is no difference in the types of strategies and the level of use of Strategic planning, control and performance measurement.

T In the relationship between strategy types and Strategic decision making, the value of Chi-Square = 16,555 and Sig. = 0.000. This shows that the difference in the types of strategies and the level of using Strategic decision making in strategic management accounting is significant with 99% confidence.

In the relationship between Strategy Types and Accounting Competitor Accounting, the value of Chi-Square = 8.112 and Sig. = .017 less than 0.05. This shows that the difference in the types of strategies and the level of using Accounting Competitor Accounting in strategic management accounting is significant with 98% confidence.

In the relationship between Strategy Types and Customer Accounting, the value of Chi-Square = 28,871 and Sig. = 0.000. This shows that the difference in the types of strategies and the level of using Customer Accounting in strategic management accounting is significant with 99% confidence.

Table 3. A comparison of SMA techniques used by the companies on the three strategy types: Results of Chi Square test analysis

SMA techniques	Strategy types**			χ ² statistic	p value
	Operational excellence strategy	Customer-friendly strategy	Strategy to lead in quality		
Strategic costing	100.0%	61.7%	80.8%	20.171	.000
Strategic planning, control and performance measurement	66.7%	53.3%	61.5%	1.814	.404
Strategic decision making	25.6%	45.0%	76.9%	16.555	.000
Accounting Competitor Accounting	33.3%	50.0%	69.2%	8.112	.017
Customer Accounting	43.6%	91.7%	53.8%	28.871	.000

5. CONCLUSION

Qualitative research results have shown that all surveyed subjects are aware of the importance of strategic management accounting information. However, companies have not used all 15 strategic management accounting techniques. Many strategic techniques have not been explored by managers. The survey results support the hypothesis that there is a relationship between the types of strategies and the use of strategic management accounting techniques (except for the group of Strategic planning, control and performance measurement). For companies pursuing a strategy of operational excellence, that is, they deliver products faster, more conveniently, and at lower costs than their competitors. As a result, these companies used strategic management accounting techniques for costs. This result is consistent with the theoretical literature. With businesses pursuing a customer-friendly strategy, they understand the needs of their customers and always try to serve them the best. According to the research results, these companies used management accounting techniques on customers the most. This is quite reasonable in theory. For companies pursuing a strategy of quality leadership, managers are using almost comprehensively strategic management accounting techniques.

Strategic management accounting provides managers with a framework of technical groups that help businesses plan, control, and evaluate performance. Many businesses around the world operating in different fields have successfully applied strategic management accounting. The research results show that there is a relationship between corporate strategy and strategic management accounting techniques. Therefore, businesses in Hanoi need to apply strategic management accounting techniques in a highly competitive environment. There are many strategic management accounting techniques that are new knowledge for business administrators and accountants. Each enterprise should learn and participate in training courses to foster knowledge about management accounting in general and strategic management accounting in particular to improve the ability to provide useful and effective information.

REFERENCES

- 1) Brewer, P. C., Garrison, R. H., & Noreen, E. W. (2015). *Managerial accounting* (p. 832). McGraw-Hill Create.
- 2) Bromwich, M. (1990). The case for strategic management accounting: The role of accounting information for strategy in competitive markets. *Accounting, Organizations and Society*, 15(1/2), 27–46.
- 3) Bromwich, M., & Bhimani, A. (1994). *Management accounting—Pathways to progress*. London: CIMA Publishing
- 4) Cadez, S. and Guilding, C. (2008), "An exploratory investigation of an integrated contingency model of strategic management accounting", *Accounting, Organizations and Society*, Vol. 33, pp. 836-863.

Strategy and Strategic Management Accounting: A Study of Enterprises In Hanoi

- 5) Cinquini, L., & Tenucci, A. (2007). Strategic management accounting and business strategy: A loose coupling? *Journal of Accounting & Organizational Change*, 6(2), 228–259.
- 6) Cinquini, L., & Tenucci, A. (2007). Is the adoption of Strategic Management Accounting techniques really “strategy-driven”? Evidence from a survey.
- 7) Guilding, C., Cravens, K. S., & Tayles, M. (2000). An international comparison of strategic management accounting practices. *Management Accounting Research*, 11(1), 113-135
- 8) Tanc, A., & Gokoglan, K. (2015). The impact of environmental accounting on strategic management accounting: A research on manufacturing companies. *International Journal of Economics and Financial Issues*, 5(2), 566-573.
- 9) Simmonds, K. (1981): Strategic Management Accounting. *Management Accounting*, 1981, vol. 59, no. 4, pp. 26-30.
- 10) Simons, R. (1987). Accounting control systems and business strategy: An empirical analysis. *Accounting, Organizations and Society*, 12(4), 357-374.
- 11) Roslender, R., & Hart, S. J. (2003). In search of strategic management accounting: theoretical and field study perspectives. *Management accounting research*, 14(3), 255-279.



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Financial Reporting Fraud and Models to Assist in Detecting Financial Statement Fraud



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ABSTRACT: The article has used the methodology, analysis and synthesis to accomplish the set research objectives. Accordingly, based on the methodology, the article has presented the concept, purpose and importance of information provided in financial statements. Under many influences such as pressure to commit fraud, opportunities for fraud or management's attitude will lead to the intention to manipulate the financial statements. Next, the article also analyzes typical fraud cases, the impact of fraudulent financial statements on all financial market participants and identifies common forms of financial fraud in Vietnam. Vietnam. From these common types of fraud, the authors also propose two typical models to support fraud detection that are highly appreciated, the M-score model and the Z-score model.

KEYWORDS: Financial statements, Fraud, M-score, Model, Z-score

1. INTRODUCTION

In Vietnam, many businesses have been found to have fraudulent financial statements, causing a series of investors to lose their investments. Typically, the case of Vien Dong Pharmaceutical Company in 2011, Tay Bac Mineral Investment Joint Stock Company in 2012, Cuu Long Pharmaceutical Joint Stock Company in 2014 and Viet Nhat JVC Medical Joint Stock Company in 2012. 2015, Wood Industry Group in 2016. In addition, many businesses have committed fraud and provided false information on financial statements that have been sanctioned for many years. Financial statements have an important meaning in the field of economic management, attracting the attention of many people inside and outside the business. Each audience is interested in financial statements in a different way, but in general, they want to get the necessary information for making decisions in accordance with their goals. Cases of fraud and manipulation by these businesses have raised alarms about the quality of information on financial statements. The financial management agency has taken many measures to rectify, check and inspect as well as require enterprises to enhance the quality of audit reports for units with public interest, but the effect is not high. The goal of this article is to learn about financial reporting and recent forms of financial reporting fraud. Recommend highly appreciated fraud detection models to assist investors in making their decisions.

2. LITERATURE REVIEW

2.1. Financial report

The concept of financial statements is specified in Clause 1, Article 3, "Financial statements are economic and financial information systems of an accounting unit, presented according to the form prescribed in accounting standards. accounting and accounting regime" (Law on Accounting No. 88/2015/QH13). As an important document in the accounting field, Financial Statements contain information about the financial position of a business for a certain period of time. A financial statement consists of four main components: balance sheet, statement of cash flows, statement of income and statement of changes in equity. Financial statements are used to assess the financial position of a business, providing information to investors, business partners and regulators. According to Article 97 of the Circular guiding the corporate accounting regime, the financial statement is a tool that provides information on the financial position, business situation and cash flows of an enterprise, meeting the requirements of management business owners, government agencies and useful needs of users in making economic decisions (Circular 200/2014/TT-BTC). In simple terms, financial statements provide financial, business and cash flow information about a business. A financial statement must include information about Assets, Liabilities, equity, sales, profits, taxes, and cash flows. In addition, Article 97 of this circular also requires enterprises to provide other information in the "Notes to the Financial Statements" in addition to the above information in order to explain more about the above-represented indicators. the consolidated financial statements and the accounting policies applied to recognize the arising economic transactions. Thus, the information on the

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financial statements gives the interested parties grounds to make investment decisions. If an enterprise provides inaccurate information on debt or revenue and profit, investors may misjudge the business ability of the enterprise. The wrong assessment of the business status will lead to economic losses for investors, business partners and serious economic consequences.

2.2. The role of financial statements

Financial statements show the most general and comprehensive view of assets, capital, liabilities and business results in an accounting period. The information contained in the Financial Statements provides the primary means of assessing the position, performance and financial position of an enterprise in the past operating period and projections for the future. In the field of economics, financial statements are important. It attracts the attention of many audiences inside and outside the business. Each audience has different interests in the information in the financial statements, but the general purpose is that they want to use the information on it to make their own business and investment decisions. Because the financial statements carry all the information of the business to the stakeholders, it has many roles. In the role of business managers, financial statements provide general information about the status of assets, the source of asset formation as well as the business situation and results after a period of operation. On that basis, business managers will analyze, evaluate and offer solutions for the development or plan to expand or reduce the production scale of the enterprise in the future. In the role of relevant state agencies such as banking units, audit units, tax and financial statements, financial statements are important documents in inspecting, supervising, guiding and advising on the implementation of these economic and financial policies and regimes for enterprises. In the role of investors, financial statements help to understand clearly financial capacity, use of assets, capital sources, profitability, efficiency of production and business activities, the risk level of the business for them to consider, choose and make investment decisions accordingly. In the role of suppliers, financial statements help identify the ability to pay, the payment method. From there, they decide to cooperate in selling to the business or stop cooperating. In the role of customers, financial statements help them have information about production capacity, product consumption, business reputation, and customer treatment policies. After seeing the correct information, they will carefully consider the purchase of the business. In their role as shareholders and employees, financial statements help them to understand information about dividend payment policy, salary, social insurance, and their benefits shown in financial statements.

2.3. Basic requirements for financial statements

According to Article 5 of the Law on Accounting, financial statements must be prepared accurately, honestly and in accordance with the prescribed forms. The financial statements must have all the signatures of the relevant people and the certification mark of the agency or unit to ensure legality. Financial statements must always be consistent in content, accounting order and preparation method according to the State's regulations, promptly and accurately reflect accounting information and data. Reflect clearly, easily and accurately accounting information and data. To honestly and objectively reflect the current state of affairs, the nature of events, the content and value of economic and financial operations. Accounting information and data must be reflected continuously from the time of arising to the end of economic and financial activities, from the establishment to the termination of operation of the accounting unit; the accounting data of this period must follow the accounting data of the previous period. Classification and arrangement of accounting information and data in order, systematically and comparably and verifiable (Law No. 88/2015/QH13). From there, users can compare and evaluate the production and business activities of enterprises over time, or between enterprises. The figures reflected in the financial statements must be clear, reliable and easy to understand, ensuring convenience for the users of the information in the financial statements to achieve their purposes. Financial statements must be prepared and sent within the prescribed time limit (Law No. 88/2015/QH13). In addition, the financial statements must also ensure compliance with the issued accounting principles and standards. Only then will the new financial reporting system be really useful, to ensure that it meets the requirements of the users to make appropriate decisions. Thus, in case the financial statements do not meet the above requirements, it means that the enterprise prepares the financial statements with errors. Mistakes can be due to errors from objectivity and can also be due to the subjectivity of the creator. If errors due to subjective factors occur in financial statements, it means that there is the influence of objects in the enterprise to falsify information, also known as manipulation of financial statements and reporting fraud. In this article, we focus on errors that occur due to the intentional manipulation of data by humans leading to fraud in financial statements.

2.4. Fraudulent financial statements

According to Boyle et al. (2015), fraud includes forms such as asset fraud, employee misappropriation, and financial reporting fraud. Fraud is also understood as management's concern about the company's performance that leads to this behavior (p.41). According to Grove et al. (1982), the limitations of creating vulnerabilities for financial fraud have existed since the 70s of the 19th century. He listed the first and most influential factors as the influence of the founder's corporate governance, the weakness of

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the Internal Control System, the management's focus on short-term performance objectives, the ethical factor and the lack of transparency in business operations (pp.153-162). Author Donal R. Cressey (1919-1987) conducted a study of 200 economic crimes on embezzlement and embezzlement. After hitting girls and analyzing the answers of the respondents, the cause of cheating is created by three factors: "Pressure, opportunity and attitude". Accordingly, when the corporate management fails to satisfy the needs and desires of investors, customers, partners, employees in terms of revenue, profit, liquidity or salary, it will put pressure on the business management department. This pressure can be an incentive for management to find ways to manipulate the figures on financial statements to increase profits and increase liquidity. The second factor is Opportunity, this factor is analyzed by the author and the management will take advantage of legal loopholes and the laxity of the law to commit fraudulent acts. Finally, there is the Attitude factor. This element states that the intention to cheat will be different for different people. Also under pressure, but many managers are adamant about not working to make the data better.

3. METHODS

The two research methods used in this article are the methodology, the analytical method and the synthesis method. Using these methods, we have learned the regulatory documents on financial statements, the purpose of financial statements, the requirements for it. All of these financial reporting materials are compiled and built on the theoretical basis of Financial Statements, financial reporting roles and fraud. The literature on particularly serious financial fraud is included in the analysis and presents typical forms of fraud commonly occurring in the Vietnamese market. The documents related to the predictive model of the possibility of fraud in the financial statements of enterprises are synthesized, selected models that are highly appreciated by many researchers for their effectiveness to present in the article.

4. RESULTS

According to Beasley (2001), accounting regulators have combined with the legislature to implement a series of changes aimed at preventing financial fraud after expensive lessons from the cases of Enron, Tyco and WorldCom financial fraud in 2000. Changes included the enactment of the Sarbanes-Oxley Act of 2002, the establishment of the Public Company Accounting Oversight Board (PCAOB) and the issuance of Auditing Standard 99 (SAS 99) in 2002, "Reviewing Fraud in Financial Statements Auditing" (now AU Sec. 316 (AU 316)). After these changes, the situation against financial reporting fraud has not improved. A series of fraud cases still take place with no sign of decreasing compared to before (pp.3-9). According to Hang (2022), financial reporting fraud is a problem that causes especially serious consequences for investors, the government and the businesses that commit the wrongdoing. Financial reporting fraud thrives in a group of developing countries with high-growth capital markets and rapidly growing investment activities. Fraudulent financial statements cause investors, customers and the public to lose confidence in the regulatory agency's ability to manage and operate economic markets (para 6). In Vietnam, many businesses have been found to be fraudulent, causing a series of investors to lose their investments. Typically, the case of Cuu Long Pharmaceutical Joint Stock Company in 2014 and Viet Nhat JVC Medical Joint Stock Company in 2015. The financial scandal of Cuu Long Pharmaceutical Joint Stock Company was discovered to have irregular financial transactions. The enterprise's unusual performance was discovered at the end of the first quarter of 2014 when the "borrowing" and "debt" sections on the equivalent financial statements were equal to the enterprise's debt of VND 250 billion. The reason businesses commit fraud is because the receivables ratio from customers is too high, equal to 34% of total assets. The corporate management of Cuu Long Pharmaceutical Joint Stock Company has created virtual revenue, causing the amount of profit reported to be excessively high. After reporting high profits, the company continued to inflate the share price to sell to the public. Finally, this business has the activity of pushing drug prices through each transaction between a group of businesses with common interests. This scandal has caused a series of serious losses for investors and pharmaceutical customers have to bear the price pushed by the business. Further analysis with the second case of Viet Nhat JVC Medical Joint Stock Company. This enterprise had many unusual points in 2015 when it was continuously late to submit financial statements, used capital issued to shareholders for improper purposes and the cash at the enterprise was too large up to VND 465 billion and receivables increased sharply from 400 billion dongs to 615 billion dongs without explaining the specific reason in the financial statements.

The reason for this fraud is that the company used the money to be distributed to shareholders to pay for the obligations that have arisen in the past. Therefore, in order to make up for this, the company has approved other businesses to help guarantee these businesses for bank loans. The collateral is used by the enterprise with its own shares through a third party. Corporate fraud includes the issuance of shares to shareholders that are not disclosed. Increase the amount of cash available at the business to make the difference disappear. Make many bogus economic contracts as a basis for disbursement to banks through backyard companies. After the financial statement accounting is completed, the money used to cover these losses is returned to the bank. This fraud case also caused a series of objects such as shareholders and banks to suffer serious damage. Thus, after these fraud

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cases, the confidence of domestic and foreign investors was seriously reduced. Many investors withdraw their capital from Vietnam because the market lacks transparency, causing the financial market to lack capital. Businesses with transparent financial statements are also turned away by a large group of investors due to their lack of trust in businesses in Vietnam. From the two examples of financial statement fraud that we analyzed above, we can draw the main forms of fraud in Vietnam as follows:

Businesses hide liabilities and expenses. Similar to the fraud method of the two businesses mentioned above. Cutting costs through debt concealment is a common financial statement fraud scheme to overstate profit margins. The lower the cost, the higher the profit, so the increase in the difference due to fraud is proportional to the decrease in the amount of hidden costs or debt. The main methods of concealing fraud and expenses are not recording liabilities and expenses, not making adequate provisions; cost capitalization; no returns for sale - deductible and non-deducting warranty costs.

The business recognizes virtual revenue or declares an increase in revenue. The creation of fake contracts by the company Viet Nhat JVC Medical Joint Stock Company is an example of this form. This form is used frequently with the method of creating fake customers and other fake documents to formalize sales. In fact, there are not any goods sold in these activities and after accounting for the financial statements at the end of the year, these "virtual goods sold" will be recorded in the "Returned sales" section. In addition, the recording of an increase in revenue is also done through the form of recording an increase in the quantity and selling price of goods on the invoice. Next is the method of fraud through pre-recognition of sales of goods sold.

The business mispriced the account. This form is done by misvaluing assets, which is done by not recording a decrease in inventory value when goods are damaged, failing to fully set up provisions for the devaluation of inventories, and bad debts receivables, short-term and long-term investments. Assets that are often mispriced, such as assets acquired through business combinations, fixed assets, inadequate capitalization of intangible costs, and misclassification of assets.

Enterprises use the form of "Sell, re-purchase/re-lease". This trick was used a lot by Lehman Brothers before it was discovered to be manipulating earnings. In Vietnam, Eximbank was also taken to the public for using this form of fraud to "beautify" financial statements in 2016. This form of fraud is performed by enterprises by recording an increase. revenue from selling fixed assets of great value and recognizing this revenue but immediately leasing back the same asset.

The enterprise recorded the wrong accounting year. Delaying the revenue recognition time leads to this revenue appearing on the financial statements in the correct accounting period. This recording of revenue can be backward from the current year to the next year or vice versa for the purpose of increasing or decreasing income according to the wishes of the business management.

Enterprises do not declare full information. In order to conceal information and reduce the analysis ability for the auditors, the enterprise will not fully declare information. Information that is often misrepresented and understated and not fully disclosed in the notes to the financial statements is a contingent liability, events occurring after the balance sheet date are not recognized in the statements, information about related parties, and changes in accounting policies.

To prevent these forms of fraud, Vietnam has issued Auditing Standard 240 (VSA 240). This standard clearly sets forth the auditor's responsibilities in relation to fraudulent financial statements. The Standard also requires the auditor to assess the risks and potential misstatements of the entity's financial statements, if any. However, in recent years, the Vietnamese market has continuously experienced fraud and discrepancies between pre-and post-audit financial statements. Therefore, from an investor's perspective, auditing standard 240 has not really been effective in the decision-making process. Therefore, to avoid having incorrect data affect investment decisions. Investors need to use a variety of methods to support their decision-making. These support tools will give investors a prediction about the possibility of fraudulent financial statements of enterprises.

4.2. Outstanding financial reporting fraud detection models

According to Grove & Basilico (2011), identifying forms of fraud and learning about fraudulent financial statements in order to draw lessons learned and provide measures and strategies to detect and reduce these frauds. cheating in the future. The author Schilit (2010), said that in order to find fraud, it is necessary to carefully study the forms of fraud. He said that signs of fraud are recognizable, easy to find and hard to miss. (p.8). Thus, the study of scandals helps us to have a clearer view of the ways businesses often use to manipulate income and attract investors. Along with that, identifying indicators that are often affected by management has helped many researchers develop tools to detect and warn of financial fraud. Currently, there are many models to assist investors, customers and partners in assessing the possibility of fraud. In this article, we refer to three models that are said to be influential and widely used Beneish's M - Score model and Edward Altman's Z - Score model.

Beneish's M-Score model

Messod Beneish's model was first published in 1999. The model was built with 8 financial indicators for the purpose of detecting fraudulent financial statements of enterprises (Beneish, 1999). According to authors Nguyen & Nguyen (2016), the "M-score model is one of the useful techniques in detecting earnings manipulation behavior of companies and can be applied to improve the

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quality of reporting financial reporting and better protection for investors” (p.14). Holda, (2020) also confirmed the effectiveness of the M-score model in detecting fraud and manipulation of financial statements in Poland (p.389). Alfian & Triani (2019) concluded in their research that the Beneish M-Score model is an easy-to-use and nearly cost-free tool. The author also advises investors to use this calculation tool before making an investment (p.27). The formula for the M - Score Model is as follows:

$$M - \text{Score} = -4.840 + 0.920 * \text{DSRI} + 0.528 * \text{GMI} + 0.404 * \text{AQI} + 0.892 * \text{SGI} + 0.115 * \text{DEPI} - 0.172 * \text{SGAI} - 0.327 * \text{LVGI} + 4.697 * \text{TATA}$$

In there:

The dependent variable is M-Score, which predicts the possibility of financial statement fraud

The independent variable includes DSRI - accounts receivable for sales index; GMI - gross margin index; AQI - asset quality index; SGI - sales revenue growth index; DEPI - depreciation rate index; SGAI - selling and administrative expense index; LEVI - financial leverage index; TATA - accrual variable index to total assets.

After the calculation, we will use the results of the M-score model calculation to evaluate the possibility of financial statement fraud. The reference point of this model at two points is -2.22 and -1.78. Enterprises with an M-score < -2.22 are less likely to have financial statement manipulation. Businesses with a score of $-2.22 < \text{M-score} < -1.78$ are those with a moderate likelihood of fraud. Enterprises with an M-score > -1.78 are likely to have fraudulent financial statements. The component indicators in the model also show some predictions about the possibility of corporate fraud. For example, the DSRI, GMI, AQI, SGI, DEPI and TATA indexes have a positive coefficient in the formula. When these ratios are greater than 1, the company is showing signs of possible financial fraud. In contrast, the two indexes SGAI and LVGI have negative coefficients, so if these two indexes are greater than 1, it will have a positive effect on the M-score and reduce the risk of financial fraud.

Edward Altman's Z-Score model

The Z-score model was built in 1968 by Professor Edward Altman based on statistical methods. Altman's original model was only for manufacturing firms and not for financial firms. Altman built a model with 5 financial indicators to assess the bankruptcy risk of enterprises. These calculation criteria are collected from secondary data from the financial statements of enterprises (Altman, 1968). Anjum's study (2012) confirmed the appropriateness of the Z-score model in predicting the bankruptcy of enterprises in the economic field and it can predict this possibility from 1 year to 3 years in advance (p.212). Similar to Anjum's comments, Panigrahi (2019) and Andriawan & Salean (2016) also believe that the Z-score model is a good tool to predict the bankruptcy of an enterprise (p.65). The Z-Score formula is determined as follows:

$$Z - \text{Score} = 1.2 * X1 + 1.4 * X2 + 3.3 * X3 + 0.6 * X4 + 0.999 * X5$$

In there:

Dependent variable Z - Score is the Z Score achieved by the company

Independent variables: X1 - working capital/total assets ratio; X2 - retained earnings/total assets ratio; X3 - profit before interest and taxes/total assets; X4 - Market value of equity/book value of total debt; X5 - Ratio of sales/total assets.

The calculation results of the Z-score model are determined at point 2.99. If $Z > 2.99$ are businesses with healthy financial status, they are eligible to be classified in the safe zone. If $1.81 < Z < 2.99$, businesses have weak financial performance and are at risk of bankruptcy. If $Z < 1.81$ the business with financial distress and the risk of bankruptcy is very high. In addition to the version for manufacturing businesses, to meet the evaluation needs of unlisted financial and manufacturing businesses, Z-Score has two more versions, Z'-Score and Z'' -Score. The defining formula of these two models is $Z' = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$ and $Z'' = 3.25 + 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$.

Through understanding the above two models, we see that the use of these two tools in the assessment of financial statement fraud brings high efficiency to investors. The application of this model helps businesses and investors avoid losses when conducting investment and cooperation in production and business.

5. CONCLUSION

The content of the article we presented above has fulfilled the research objectives set out at the beginning of the article. Build a theoretical basis as an argument for the article. Identify types of financial reporting fraud and provide typical examples of financial reporting fraud in Vietnam. After researching and analyzing financial statement fraud, we found that financial statement fraud seriously affected investors, customers, and the economy. Therefore, the use of tools is absolutely necessary before making investment decisions. The authors also provide two models that are highly appreciated by many authors for their ability to detect fraud and predict bankruptcy. The two models presented are the M-score model and the Z-score model. The combination of learning, recognizing signs of fraud, and the tools outlined above can help investors and other interested parties not make the wrong decisions in the face of manipulated financial statements needy.

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REFERENCES

- 1) Accounting Law No. 88/2015/QH13, accessed July 17, 2023 from <https://thuvienphapluat.vn/van-ban/Ke-toan-Kiem-toan/Luat-ke-toan-2015-298369.aspx>
- 2) Alfian, F., & Triani, N. N. A. (2019). Fraudulent financial reporting detection using beneish m-score model in public companies in 2012-2016. *Asia Pacific Fraud Journal*, Volume 4, Nomor 1 (January-June) 2019, pp.27-42
- 3) Altman E.I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy.
- 4) Andriawan, N. F., & Salean, D. (2016). Analisis Metode Altman Z-Score. *JEA17: Jurnal Ekonomi Akuntansi*, 1 (1), pp.67-82
- 5) Anjum, S. (2012). Business bankruptcy prediction models: A significant study of the Altman's Z-score model. *Asian journal of management research*, Volume 3 Issue 1, 2012, pp.212-219
- 6) Auditing Standard No. 240: Auditors' responsibilities related to fraud during the audit of financial statements (Issued together with Circular No. 214/2012/TT-BTC dated December 6, 2012 of the Ministry of Finance). Finance)
- 7) Beasley, M. S., Carcello, J. V., & Hermanson, D. R. (2001). Financial Reporting Fraud: Could It Happen to You?. *Journal of Corporate Accounting & Finance*, 12(4), 3-9.
- 8) Beneish, M.D. (1999). The Detection of Earnings Manipulation, Indiana University, Kelley School of Business, Working Paper Series.
- 9) Boyle, D. M., Boyle, J. F., & Mahoney, D. P. (2015). Avoiding the fraud mind-set. *Strategic Finance*, 96(8), 41-47.
- 10) Circular No. 200/2014/TT-BTC, guidance on corporate accounting regime,
- 11) Circular No. 53/2016/TT-BTC, amending and supplementing a number of articles of Circular No. 200/2014/tt-btc dated December 22, 2014 of the Ministry of Finance guiding the corporate accounting regime, accessed on December 12 July 2023 from <https://thuvienphapluat.vn/van-ban/Doanh-ngghiep/Thong-tu-53-2016-TT-BTC-sua-doi-Thong-tu-200-2014-TT-BTC-huong-dan-che-do-ke-toan-entertainment-entertainment-306808.aspx>
- 12) Grove, H., & Basilico, E. (2011). Major financial reporting frauds of the 21st century: Corporate governance and risk lessons learned. *Journal of Forensic and Investigative Accounting*, 3(2).
- 13) Grove, H., F. Selto and J. Sorensen. (1982). Detecting Management Fraud: Combining an Empirical and Probabilistic Approach. *Symposium on Auditing Research V*, University of Illinois, November, 1982, pp. 73-116 and 153-162.
- 14) Hang, D.T.T. (2022). Types of fraud on corporate financial statements and implications for Vietnam. *Financial Magazine*, period 1 - June 2022.
- 15) Hořda, A. (2020). Using the Beneish M-score model: Evidence from non-financial companies listed on the Warsaw Stock Exchange. *Investment Management & Financial Innovations*, 17(4), 389-401.
- 16) Li, J. (2012). Prediction of corporate bankruptcy from 2008 through 2011. *Journal of Accounting and Finance*, 12(1), 31-41.
- 17) MacCarthy, J. (2017). Using Altman Z-score and Beneish M-score Models to Detect Financial Fraud and Corporate Failure: A Case Study of Enron Corporation. *International Journal of Finance and Accounting* 2017, 6(6): 159-166. DOI: 10.5923/j.ijfa.20170606.01
- 18) Nguyen, H. A., & Nguyen, H. L. (2016). Using the M-score model in detecting earnings management: Evidence from non-financial Vietnamese listed companies. *VNU Journal of Economics and Business*, 32(2). pp.14-23
- 19) Panigrahi, C. M. A. (2019). Validity of Altman's 'z'score model in predicting financial distress of pharmaceutical companies. *NMIMS journal of economics and public policy*, 4(1) January 2019, pp.65-73
- 20) Schilit, H., "Financial Shenanigans: Detecting Accounting Gimmicks that Destroy Investments," *CFA Journal*, 2010, pp. 1-8.
- 21) *The Journal of Finance*, vol. 23 no. 4, p. 589–609



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Facilities of Higher Education Institutions, Empirical Assessment at the University of Labor and Social Affairs



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SUMMARY: The article uses two research methods, which are the document review method and the qualitative research method. Research results have clarified the entire goal set out in the article. The theoretical basis of facilities and the role and regulations of facilities for higher education institutions are presented in detail in the theoretical basis of the article. Next, the results of the interviewees were statistically analyzed and presented in the article. With the average assessment results, the facilities of the University of Labor and Social Affairs still need to be changed and upgraded soon to ensure training quality. The authors also based on the existing points in the construction of facilities at the University of Labor and Social Affairs to offer some solutions to improve the quality and best serve training activities in the future.

KEYWORDS: Facilities, Higher education institutions, Learners, University of Labor and Social Affairs

1. INTRODUCTION

After Vietnam implemented the Resolution of the 2nd Party Central Committee, term VIII on strategic orientations for the development of Education - Training in the period of industrialization and modernization, the field of education and training achieved important achievements. Educational and training facilities and equipment have been significantly improved and gradually modernized. However, the quality and effectiveness of education and training are still low compared to the requirements, especially in higher education and vocational education. Investment in education and training has not been effective. The financial policies and mechanisms for education and training are not appropriate, the technical and material facilities are lacking and outdated. In that situation, the State issued Resolution No. 29-NQ/TW on a fundamental and comprehensive renovation of education and training, meeting the requirements of industrialization and modernization in the context of a defined market economy socialist orientation and international integration. Based on the project "Strengthening facilities, improving the capacity of teachers and researchers, and renovating activities of scientific research and technology transfer in higher education and educational institutions vocational education for the period 2017 – 2025" for subjects Higher education institutions have once again stepped up investment in science and technology development, funded from the investment budget for the development of education and training, education and training career. With the policy of the Vietnamese government and synchronous plans and solutions from the project, the University of Labor and Social Affairs has also gradually implemented the implementation of improving the quality of facilities through funding from the state budget allocated, funding from the investment budget for the development of education and training, education and training, and funding from the revenue of higher education institutions. Annually, the school is based on the allocation of funds from the State budget and the collection of non-business activities of the school to calculate expenditures on investment activities, upgrading facilities. The research objective of this article is to understand the role, regulations and requirements for facilities for higher education institutions. Find out about the state of facilities at the University of Labor and Social Affairs. Through the assessment of learners identify the existence of the facility system and take remedial measures.

2. THEORETICAL BASIS

2.1. Facilities

Currently, there are many definitions of facilities, but most authors think that facilities are all physical facilities used by teachers and learners to effectively carry out their work results of educational programs. According to Ry (2004), "Facilities are means of pedagogical labor of educators and students. This is a system that includes the campus, common equipment, teaching equipment according to subjects and equipment for other educational activities such as labor education, aesthetic education, physical

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education, etc ... ". Thao & Truyen (2003) defined "Facilities are all material means mobilized for teaching, learning and other educational activities to achieve educational purposes". According to the Decision on promulgating the University's Charter, the facilities are identified as "the university's assets including: land, buildings, construction works, results of scientific activities and technology, equipment and other assets assigned by the State to the university for management and use, or purchased, built by the university, or donated or donated to ensure training and scientific research activities. Technology learning and development and other activities" (Decision, No. 70/2014/QĐ-TTg).

2.2. Regulations on facilities at higher education institutions

According to the Regulation on Accreditation of higher education institutions issued by the Minister of Education & Training, educational facilities must meet 9 criteria. The university's library is fully stocked with books, textbooks, and reference materials in Vietnamese and foreign languages to meet the usage requirements of officials, lecturers and learners. There is an electronic library that is connected to the internet, effectively serving teaching, learning and scientific research. There are enough classrooms, large lecture halls, practice rooms and experiments for teaching, learning and scientific research to meet the requirements of each training discipline. Having sufficient teaching and learning equipment to support training and scientific research activities, ensuring quality and effective use, meeting the requirements of the training sectors. Provide adequate information technology equipment to effectively support teaching and learning activities, scientific research and management. Having enough classroom space as prescribed for teaching and learning; having dormitories for learners, ensuring adequate housing and living areas for boarding learners; having equipment and yards for cultural, artistic and sports activities according to regulations. There is a master plan for the use and development of facilities in the strategic plan of the school. There are effective measures to protect property, order and safety for administrators, lecturers, staff and learners (Circular No. 12/2017/TT-BGDĐT).

2.3. The role of facilities

Facilities play a very important role in innovating teaching methods that see learners as the center of the cognitive process. In this direction of positive innovation, the teaching method is reflected in a number of fundamental changes as follows: Learners are actively involved in the learning process. Learners directly participate in the learning organization, practice and work more in the learning process. In order to satisfy the above changes, it is necessary to have the participation of facilities to meet the needs of learners for effective learning with full and diverse equipment of teaching and learning materials laboratories, department rooms, libraries and other supporting facilities. Facilities also make practical contributions to the diversification of teaching forms. A system of schools, classrooms, and proper yards will help organize diverse and flexible forms of teaching and educational activities such as outdoor teaching and classroom teaching. Traditional libraries and electronic libraries provide an extremely rich amount of knowledge, presented fully and scientifically to help learners exploit and increase the quality of learning. Currently, with the outstanding development of science and technology, the information technology industry has contributed a lot of modern technical means to directly support educational managers, teachers and learners of the field of science and technology quantity of information, clear and accurate presentation of scientific knowledge. The use of information technology in schools today has created conditions for teachers and students to have a close relationship, learners are really interested in participating in class, practicing self-study and self-control knowledge acquisition.

3. METHODS

To assess the current state of facilities at the University of Labor and Social Affairs for learners, the research team also used a combination of secondary data collection methods. The secondary data source gives a more objective and holistic view of the research problem and its correlation with other related issues. The main sources of information collected by the authors include data published in the Self-Assessment Report of the University of Labor and Social Affairs, including data on classrooms, library systems, and technological equipment systems equipped for students' classrooms. Information from the website of the University of Labor and Social Affairs about the school's overview, vision, mission, goals, and news related to the school's educational accreditation. Books, magazines and electronic news related to facilities experts' assessment of higher education institutions. Interview with learners. The authors based on the prescribed criteria of facilities to give interview questions. The interview results were statistically analyzed and presented in the article.

4. RESULTS

4.1. The situation of facilities and equipment at the University of Labor and Social Affairs

The University of Labor and Social Affairs was founded in 1961 with the vision of Training highly qualified human resources with application orientation and strengthening linkages and training cooperation with foreign countries. The University of Labor and Social Affairs has a full working room for officials, lecturers and permanent employees as prescribed. According to the Training

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Quality Assessment Report, the University has 79 working rooms (6,633 m²) to meet the working requirements of officials, lecturers and permanent employees. The system of classrooms and halls has 265 rooms (29,528m²). All working rooms, classrooms and function rooms are fully equipped with suitable equipment to support training and scientific research activities. From 2017 to 2020, the school continuously improves and repaired facilities, and upgrades and replaces equipment to suit and meet training requirements. The library information center has enough learning resources and has an electronic library room, with document search software to help lecturers, learners and staff search documents easily in the learning and research process. scientific research. The school has prioritized funding sources, relatively fully equipped with informatics equipment, effectively supporting teaching and learning activities and scientific research. The school is also equipped with adequate facilities for the system of rooms in the Dormitory to facilitate learners' study and travel. The school provides full guidance on the educational program, examination and evaluation, and training regulations and regulations; be fully guaranteed regimes and policies, conditions for cultural and artistic activities, physical training and sports, health check-ups, and safety in learning and living.

4.2. Review of facilities at the University of Labor and Social Affairs

For learners, the better the facilities, the higher the quality of training services. It can be said that facilities always have a relationship with student satisfaction. In general, the quality of services provided to customers is often associated with the quality and technological content of the facilities used to create the service. For example, are the computers in the classroom or practice room of high or low quality, of the latest technology generation or old? Similar to the equipment of the training service in the university lecture hall, there is a full system of projectors, computers, speaker systems, tables and chairs and old or new systems to evaluate its quality. In this content, we conducted interviews with learners to have a basis to assess the actual status of training facilities at the University of Labor and Social Affairs. The content of the interview is designed with 7 questions around the assurance of the school's physical requirements. Interview questions and results of interview data analysis are analyzed in this section.

Classroom

The content of the question about facilities for teaching activities was interviewed "Is the number of classrooms guaranteed, clean, with sufficient light and ventilation conditions?". The results of the student's responses are summarized in Table 1.

Table 1. Results of interviews with classroom facilities

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	7	3.0	3.0	3.0
Disagree	36	15.5	15.5	18.5
Hesitate	97	41.8	41.8	60.3
Agree	77	33.2	33.2	93.5
Totally agree	15	6.5	6.5	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

With the question "The number of classrooms is guaranteed, clean, well-lit, and well-ventilated", the percentage is quite low, with 7 interviewees answering completely disagree, accounting for 3% and 36 learners asked to disagree, accounting for 15.5%. Normally, 97 learners have chosen, accounting for 41.8%, and besides, there are 92 learners who choose to answer Agree and agree Totally agree accounted for a total rate of 39.7%. The average value of this survey variable fluctuates around the point 3.5. Thus, the majority of learners interviewed said that the school has airy and clean classrooms with adequate lighting conditions. However, there are also some conflicting opinions that the classroom is not as desired as it is dirty, hot and quite noisy, affecting learning. We need to pay attention to these opinions to have the most realistic solutions.

Teaching aids

This content is explored through the second question "Teaching support equipment is fully equipped in each classroom for teaching and learning". The results of the interview data analysis are presented in Table 2.

Table 2. Interview results in teaching aids

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	3	1.3	1.3	1.3
Disagree	41	17.7	17.7	19.0
Hesitate	70	30.2	30.2	49.1

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Agree	102	44.0	44.0	93.1
Totally agree	16	6.9	6.9	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

With the interview question "Teaching support equipment is fully equipped in each classroom for teaching and learning", there are 3 opinions that completely disagree with this statement accounting for 1.3%, 41 disagreeing opinions from the survey participants accounted for 17.7%, 70 respondents said that the average rate was 30.2%. Contrary to the above opinions, up to 102 learners who participated in the survey were asked to agree, accounting for 44%, and 16 respondents said that they completely agree, accounting for 6.9%. Thus, the majority of respondents said that teaching aids are fully equipped in each classroom for teaching and learning. Some argue that some equipment in the classroom is new and fully equipped, but there are often errors and difficulties in using it or there is an opinion that the equipment is dirty like a computer, or the microphone is not regularly cleaned.

System of the practical machine room

This content was interviewed with the content "The machine room system is fully practical, equipped and working well". The results of the interviews and analysis are presented below.

Table 3. Results of interviews for facilities Practical machine room system

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	1	0.4	0.4	0.4
Disagree	28	12.1	12.1	12.5
Hesitate	84	36.2	36.2	48.7
Agree	83	35.8	35.8	84.5
Totally agree	36	15.5	15.5	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

With aggregated data, it was shown that 1 learner selected completely disagree with the rate of 0.4%, disagree with 28 learners choosing 12.1%, 84 learners surveyed, choosing the neutral option accounted for 36.2%, choosing to agree had 83 learners participating in the survey, accounting for 35.8% and the number of completely agreeing was 36 learners participating in the survey accounted for 15.5%. In general, the majority of survey respondents believe that the system of the machine room is fully equipped, well-equipped and in good working order.

Library

Library facilities were interviewed with the content "The school library has rich learning and reference materials, convenient search equipment". The results of the analysis and data are presented in Table 4.

Table 4. Results of interviews with library facilities

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	12	5.2	5.2	5.2
Disagree	42	18.1	18.1	23.3
Hesitate	132	56.9	56.9	80.2
Agree	40	17.2	17.2	97.4
Totally agree	6	2.6	2.6	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

Out of 232 valid answer sheets selected for data analysis, there were 12 participants in the survey who answered completely disagree, accounting for 5.2%, and 42 participants answered no agree accounted for 18.1%, 132 respondents said that Normal accounted for 56.9%, accounting for a pretty good percentage of 17.2% of respondents choosing the option agree, comments Totally agree, there are 6 learners for this answer, accounting for 2.6%. Thus, the majority of surveyed learners believe that the School Library has slightly above-average learning and reference materials. But it is worth noting that the mean value of this survey

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variable fluctuates around 3 and the number of opinions saying 'Normal' accounts for more than half of the total number of opinions, and it also shows that the University of Labor and Social Affairs needs to continue to improve the quality of the School Library.

Information system, website, training page

Information system facilities, websites, and training pages were interviewed with the content "The school's information system, website, and training page are updated regularly and easily accessible". The interview results are presented below.

Table 5. Interview results for facilities Information system, website, training page

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	5	2.2	2.2	2.2
Disagree	12	5.2	5.2	7.3
Hesitate	120	51.7	51.7	59.1
Agree	80	34.5	34.5	93.5
Totally agree	15	6.5	6.5	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

With the interview question "The information system, website, and training page of the University are regularly updated and easily accessible", there are 5 opinions that completely disagree with this statement, accounting for 2.2%, 12 disagreeing opinions from the survey participants accounted for 5.2%, 120 respondents said that the average rate was 51.7%. Contrary to the above comments, up to 80 learners who participated in the survey were asked to agree, accounting for 34.5%, and 15 respondents said that they completely agree, accounting for 6.5%. Thus, the majority of respondents said that the information system, website, and training page of the University are regularly updated and easy to access.

Dormitory

Dormitory facilities were interviewed with the content "Students' dormitory has enough accommodation, is clean, ensures appropriate basic equipment". The interview results are presented in Table 6.

Table 6. Interview results of Dormitory facilities

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	2	0.9	0.9	0.9
Disagree	50	21.6	21.6	22.4
Hesitate	77	33.2	33.2	55.6
Agree	98	42.2	42.2	97.8
Totally agree	5	2.2	2.2	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

With the interview content, "Students' dormitory has enough accommodation, is clean, ensures appropriate basic equipment". The aggregated data shows that only 2 learners selected the level of completely disagree, disagree with 50 learners choosing 21.6%, and 77 learners surveyed chose the Normal level, accounting for 21.6% rate of 33.2%, choosing to agree had 98 learners participating in the survey, accounting for 42.1% and the number of completely agreeing had 5 learners participating in the survey. In general, the majority of learners participating in the survey think that the student dormitory has enough accommodation, is clean, and has basic equipment.

Equipment for sports activities

Facilities and equipment for physical training and sports activities were interviewed with the content "The school has enough gymnasiums, after-hours entertainment points for learners (culture room, gymnasium, gym, etc.) believe...". The results of the interviews are presented in Table 7.

Table 7. Results of interviews with facilities and equipment for physical training and sports activities

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Very much disagreement	5	2.2	2.2	2.2
Disagree	43	18.5	18.5	20.7
Hesitate	138	59.5	59.5	80.2
Agree	34	14.7	14.7	94.8
Totally agree	12	5.2	5.2	100.0
Total	232	100.0	100.0	

Source: Synthesized analysis from interview data of the research team

Out of 232 valid answer sheets selected for analysis, there were 5 respondents who answered completely disagree, accounting for 2.2%, and 43 participants answered no agree accounts for 18.5%, 138 respondents think that Normal accounts for 59.5%, accounting for a modest rate of 14.7% of the respondents who are encouraged to choose to agree 34. Study and opinion totally agree, there are 12 learners for this answer, accounting for 5.2%. Therefore, most of the surveyed students think that the school's sports facilities and after-school entertainment points are at a normal level and do not appreciate this item.

Through the above data analysis, we can see that the number of learners thinks that the school's facilities and equipment for teaching are still at a normal level. At the same time, some also commented and assessed that the facilities were not good.

4.3. Restrict

When interviewing and exchanging some information with learners, the research team found that there are some problems as follows: The library also arranges reading and studying places right in the corridor, leading to unsafe conditions and the great influence of the smell of the toilet next door, the classroom is not as desired as it is dirty, hot and quite noisy, affecting learning, some equipment in the classroom is new and well maintained. The equipment is synchronous and complete, but there are often errors and difficulties in using it or there is an opinion that the equipment is dirty such as computers or microphones that are not regularly cleaned, fans installed in classrooms are damaged. The school's training website system was overloaded at the time of registration at the beginning of the semester, the dormitory still had many shortcomings such as equipment not being cleaned periodically, the room being arranged too crowded with students, so the living space is limited. There is an opinion that the school's library is still backward in document search software and does not have an electronic library.

4.4. Solution

Improve the quality of facilities by purchasing new classrooms that lack equipment, with old equipment, installing and replacing the lecture system, library and other facilities other substances for students at the school. The purpose of this solution is to help the school have a system of facilities and equipment for synchronous teaching and learning, meeting the development trend of the education industry. and meet the quality accreditation standards set by the Ministry of Education & Training and help the school maintain its position as a key school of the Ministry of Labor - Invalids and Social Affairs. However, due to the limited budget for procurement and installation of new equipment, this is a long-term solution and needs to be done step by step and a clear plan needs to be developed.

Improve lecture space and learning environment for learners. When interviewing and exchanging some information with learners, there are many opinions that the library also arranges reading and self-study places right in the corridor, leading to not ensuring quiet conditions and great influence from odors next door toilet. This problem is also caused by many objective and subjective factors. Firstly, due to the limitation of the reading area for learners when it comes to the exam season, leading to overcrowding of people studying outside of hours at the library, the increase of tables and chairs in the corridor is a temporary solution. In order to overcome some of the above shortcomings, the research team proposes that the immediate solution is that if it is not possible to improve the layout of the room for reading, research and study of learners, it is necessary to increase hygiene for the student's reading rooms, surrounding areas and library corridors. Equip a large capacity ventilation fan for the corridor and toilet area at the library so that this area is well-ventilated and clean.

Many learners have the opinion that the classroom is not as desired as it is dirty during classes, hot and quite noisy, which affects learning, some equipment in the classroom is new and old. The equipment is synchronous and complete, but there are often errors and difficulties in using it or there is an opinion that the equipment is dirty such as computers or microphones that are not regularly cleaned, fans installed in classrooms are damaged. screaming and shaking with a lot of dirt, the furniture in the classrooms is broken, peeling, and connected to the channel. In fact, it exists because the school has a very large number of learners every year, so the arrangement of continuous shifts affects the quality of classrooms, including classroom hygiene,

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equipment, and some other facilities. To overcome this situation, the solution proposed by the research team is the immediate solution. The school needs to regularly clean classrooms and constantly check lecture areas.

5. CONCLUSION

Improving the quality of facilities for learners of the University of Labor and Social Affairs, if implemented immediately and completed all remaining points, is not feasible due to the funding for infrastructure investment substance does not meet that requirement. However, if we step by step renew, replace and upgrade in stages and based on the budget to do so, it is completely possible. With the current situation of the school's facilities, in addition to investing in purchasing new facilities and equipment to improve the quality, the school can also implement two support measures to improve the quality of facilities to strictly carry out maintenance, repair, and upgrade activities with the existing equipment system and secondly to propagate to users and contact the facilities that need to raise their awareness to protect the facilities assigned by the school.

REFERENCES

- 1) Ry, V. T. (2004). *Textbook of Facilities Management in High School*, Academy of Educational Management, Hanoi
- 2) Thao, H. M. & Truyen, H. T. (2003). *Market Research*, Education Publishing House, Hanoi.
- 3) Government, Decision 70/2014/QĐ-TTg, Decision on the promulgation of the University Charter, Prime Minister, Hanoi
- 4) Circular No. 12/2017/TT-BGDĐT, Promulgating regulations on accreditation of higher education institutions. Education Publishing House



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Increase Foreign Direct Investment Attraction in Thanh Hoa Province



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SUMMARY: In recent years, more and more large projects have been invested in Thanh Hoa, showing that the province has made strong changes to improve the business investment environment. The Resolution of the 19th Party Congress of Thanh Hoa province has determined that continuing to promote administrative reform, creating an open and attractive investment environment is one of the three breakthroughs in the 2020-2025 term. , localities in the province are making efforts to implement many specific solutions to improve the business investment environment, focusing on improving governance quality and administrative reform. Thanh Hoa is still the leading locality in the Central region in terms of attracting FDI, but in recent years, Thanh Hoa province is showing signs of slowing down. The article studies the current status of FDI investment in Thanh Hoa province in the period of 2020 - 2022, from which to propose some solutions to increase FDI.

KEYWORDS: Foreign direct investment, foreign direct investment capital, investment environment.

1. INTRODUCTION

Foreign direct investment (FDI) is a particularly important capital flow for growth and international economic integration, contributing to additional capital, technology, management capacity, business ability, organizational ability. and participate in the global supply chain. The negative impact of the COVID-19 pandemic and the rapid and complicated changes in the world have forced countries to readjust their FDI policies.

FDI inflows are not only an important resource for socio-economic development, but also actively contribute to perfecting economic institutions, improving the business investment environment according to the principles of the market economy. market and in line with international practices, making a significant contribution to enhancing the country's position and power.

Thanh Hoa province is currently ranked 8th in the country and first in the North Central and Central Coast regions in attracting foreign direct investment (FDI) projects. In recent years, the province has always paid attention to investment promotion, investment promotion, administrative reform, and implementation of preferential policies and mechanisms to make Thanh Hoa an attractive destination for foreign investors.

However, the province's results of attracting foreign investment in recent years have not been as expected. The number of projects and FDI capital that Thanh Hoa has attracted in recent years has been surpassed by neighboring localities such as Nghe An and Ha Tinh. Therefore, Thanh Hoa province needs to take measures to increase FDI attraction.

2. Theoretical basis

The concept of FDI

FDI is defined in many different ways, according to the International Monetary Fund (IMF) in its annual balance of payments report, "FDI is a form of investment with long-term benefits by an enterprise in another country (country). receiving investment), not in the country in which the enterprise is operating (the country of investment), for the purpose of effectively managing the enterprise". This view mainly emphasizes on the long-term of investment activities and the investment motive is to gain management rights.

UNCTAD (2012), "FDI is a long-term investment associated with the long-term interest and control of an investor in a country (foreign direct investor or parent company) in a company in another country (foreign direct investment company or subsidiary).

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In 2020, Vietnam's Investment Law defines "outward investment activity as an investor's transfer of investment capital from Vietnam to a foreign country, using profits earned from this investment capital to carry out investment activities." business investment activities abroad".

These opinions are all in agreement, so: FDI is a type of investment that enables investors to take part in the operation of investment operations in the receiving country with the goal of making a profit.

Therefore, it is clear that FDI is a type of cross-border investment made by a foreign investor who resides in an economy in order to control or significantly influence the management of that nation. a company operating in a different economy.

The role of FDI

FDI is a significant factor in where investment capital goes.

Firstly, FDI helps to supplement capital to assure economic growth in recipient nations and regions.

Second, assist nations and communities in receiving funding for development and better utilization of domestic resources. Projects involving foreign direct investment aid nations and municipalities in making better use of their existing resources, including land and natural resources, and they particularly aid in raising the level of technology and the caliber of labor.

Thirdly, FDI enables nations and regions to access finance, expand export markets, and quicken the pace of economic reform. Additionally, the rise in the share of industry and services is the result of the trend of economic globalization as well as internal efforts on the part of the recipient nation and area.

Fourth, FDI is a realistic and highly effective kind of investment that is free from political restrictions and does not place a burden on the economy in the form of direct debt. All investment capital is brought into the host nation and region by FDI, allowing FDI to support the growth of new sectors, particularly those requiring large sums of money, sophisticated methods, and cutting-edge technology.

Fifth, FDI is linked to the transmission of knowledge in the fields of research, technology, cutting-edge methods, and management.

Factors affecting FDI attraction

(1) Infrastructure and services

Good infrastructure is one of the important factors to help investors reduce indirect costs in production and business and possibly in investment activities. Therefore, the balanced and comprehensive development of the infrastructure of a country or a locality is proposed as a top need in attracting investment capital. An investment area with a complete infrastructure system, including the development of both technical and social infrastructure.

(2) Natural conditions

Natural conditions are one of the main factors in agricultural production including geographical location, land, natural resources, and climate.

Natural resources and land are the main factors constituting the source of raw materials for production activities of enterprises. Therefore, if a country with rich resources will help businesses in cutting raw material costs and improving business efficiency, it will have a good impact on attracting FDI inflows. Nauro F. Campos and Yuko Kinoshita, 2003).

(3) Natural environment

The natural environment can be seen in the economy's stability, capacity for expansion, and profitability. This is a feature that is nation-specific. The favorable natural environment elements that will influence foreign investors' behavior and choice of investment destinations are known to them.

(4) Social environment

The advantages of the social environment factor are reflected in the level of education, attitudes and beliefs and social moral values, religion, customs, language and communication; number of employees, skill level of workers; employee discipline.

(5) Policies and institutions

Institutional and policy factors are reflected in the regulations of the central government, ministries and branches. In recent years, realizing the great role of FDI inflows to economic growth has led many governments to change their national policies towards this important capital inflow, with the main trend being to create favorable conditions. benefit from this capital flowing into the country. Most governments have issued preferential policies to attract more FDI along with adjusting the legal framework, preventing corruption, creating a transparent investment environment, etc.

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3. THANH HOA PROVINCE'S FDI ATTRACTION STATUS

Characteristics of natural and political conditions of Thanh Hoa province

Thanh Hoa is a gateway province that connects the North and the Central region. It is compared to a smaller version of Vietnam and has three distinct geographical regions: plains, mountains, and coastlines. The Northern major economic region has an impact on the area where Thanh Hoa province is situated. With 102 km of coastline, this area may grow its tourism industry and utilize its seaports. There is also access to Tho Xuan Airport, Ho Chi Minh Road, and Trans-Vietnam Railway. Furthermore, Thanh Hoa covers a big region with a diverse range of natural zones.

Over the years, Thanh Hoa has always been consistent, drastic, creative, flexible and effective in the work and activities of the Provincial Party Committee, People's Council, Provincial People's Committee; Party committees, authorities, Fatherland Front and mass organizations; the consensus and support of the business community and all classes of people in the province. In Thanh Hoa province, in 2022, the spirit of solidarity and unity among the Party committees, authorities and people will be strengthened. The sense of responsibility in leadership, direction and administration from the province to the grassroots is promoted. The confidence of the business community and the people in the development of the province is increasingly consolidated.

Socio-economic conditions of Thanh Hoa province

The third-largest population in the nation, Thanh Hoa is a land rich in historical and cultural traditions. Its inhabitants are hardworking, inventive, and combat-hardy, with a determination to rise above their circumstances and improve their community and their nation.

The province is home to the Nghi Son economic zone (1), which is connected to the Nghi Son deep-water port and eight industrial parks. It also has a sizable territorial sea, a long coastline, numerous picturesque beaches, an abundance of natural resources, and an abundance of human resources.

Implement the renewal policy initiated and led by the Party; In the past years, the Party Committee, government and people of Thanh Hoa province have united, strived, been dynamic, creative, effectively brought into play potentials and advantages, strongly aroused resources, achieved comprehensive results in many fields. The province's economic scale in 2020 will reach VND 126,172 billion, ranking 8th in the country; State budget revenue reached 30,744 billion VND, exceeding the estimate; per capita income reached 2,510 USD.

The economic structure shifts towards industry and service as the key, in which the proportion of agriculture, forestry and fishery sector accounts for 10.8%, industry and construction accounts for 48.5%, service sector accounts for 48.5%. accounted for 32.2%, other industries accounted for 8.5%.

Thanh Hoa province is in the group of 10 provinces and cities with the highest disbursement rate of public investment capital in the country. Public investment activities are directed to be implemented drastically and synchronously.

Along with socio-economic development, national defense and security, social order and safety continue to be ensured. External activities, coordination with central agencies, association and cooperation with provinces and cities throughout the country are promoted.

The socio-economic situation, national defense - security, the construction and rectification of the Party and the political system in 2022 of Thanh Hoa province have achieved many important results. There are 24/26 major targets achieved and exceeded the plan.

High economic growth, among 7 provinces and cities with the highest growth rate in the country. The growth rate of gross domestic product (GRDP) reached 12.51%, exceeding the planned target (11.5% planned). Thanh Hoa has successfully organized many major political and cultural events with strong spillover effects, creating good effects in society; culture - society continues to make progress; spearhead education, high-achievement sports remain among the leading provinces in the country. The implementation of social security policies, especially for people living on rivers, people living in areas with high risk of landslides, policy families, and those in difficult circumstances. towels are cared for and supported.

The situation of foreign direct investment in Thanh Hoa province

(1) Size of FDI

Through investment development and promotion operations, Thanh Hoa province has made a number of advances in recent years in its approach to investors and foreign capital sources. The work of provincial leaders abroad involves more than simply traveling and learning; it also involves promotion conferences that emphasize chances for collaboration and financial incentives. In order to conduct field research, learn about, and select investment prospects in crucial sectors, the province additionally organized receptions, worked, and brought numerous organizations, enterprises, and banks. Numerous delegations from the Asian Development Bank (ADB), the World Bank (WB), a delegation of experts from the Japan International Cooperation Agency (JICA), a delegation of investors from India, WHA Group of Thailand, Ramky Group of India, Millennium Corporation (USA),

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Compal Group (Taiwan), and JFE Engineering Vietnam are expected to attend in 2022. Thanh Hoa is the top location in the Central area as of 2022, with 164 registered projects and a total registered capital of 14.57 billion USD, or 24% of the total registered capital of the entire region. The Covid pandemic's effects, however, caused Thanh Hoa to slow down in luring FDI starting in 2020. Thanh Hoa has the lowest reported FDI capital in the North Central area for the entire year of 2022 at 97.51 million USD. Details of the scale of FDI capital in Thanh Hoa province in the years 2020, 2021, and 2022 are shown in the following table:

Table 1: Size of FDI capital in Thanh Hoa province in the period of 2020-2022

Targets	Year of 2020	Year of 2021	Year of 2022
Number of newly granted projects (projects)	14	11	7
Newly registered capital (million USD)	240,3	137,44	69,33
The quantity of projects to expand capital (projects)	7	8	5
Additional registered capital (million USD)	100,95	42,43	27,40
Contribution share total (turn)	22	7	4
Value of capital contribution to buy shares (million USD)	8,29	12,96	0,78
Total registered capital (million USD)	349,54	192,84	97,51

Source: Thanh Hoa Province Department of Planning and Investment

Regarding new projects, the province of Thanh Hoa has seen a decline in the number of new projects over the past several years, from 14 projects in 2020 to 7 projects in 2022. The amount of newly registered capital has also decreased in line with this trend, from 240,3 million USD in 2020 to 69,33 million USD in 2022.

The additional registered capital increased sharply in 2020 (from 24.07 million USD to 100.95 million USD), but gradually decreased in 2021 and 2022 (42.43 and 27.04 million USD).

Total registered FDI capital is the most important indicator reflecting the size of FDI capital. In the period of 2020-2022, the registered FDI capital of Thanh Hoa province also tends to decrease.

Unit: million USD

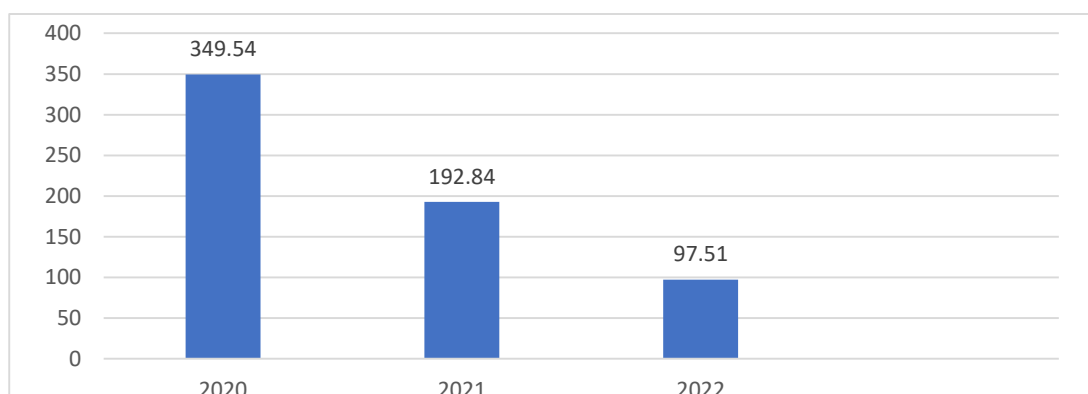


Figure 1: Total FDI registered in Thanh Hoa province in the years 2020-2022

Source: Thanh Hoa Province Department of Planning and Investment

The chart above clearly shows that the fluctuation of FDI capital registered in Thanh Hoa province gradually decreased over the years 2020-2022. Considering the whole period, from 349,54 million USD in 2020 to 97.51 million USD in 2022; equivalent rate of decrease of 72.84%; average annual decrease of 18.2%. The decline is not only reflected in the indicators of FDI capital structure, registered FDI capital in Thanh Hoa province, but also in the overall ranking of FDI attraction of Thanh Hoa province compared to other provinces across the country. . Specifically:

Increase Foreign Direct Investment Attraction in Thanh Hoa Province

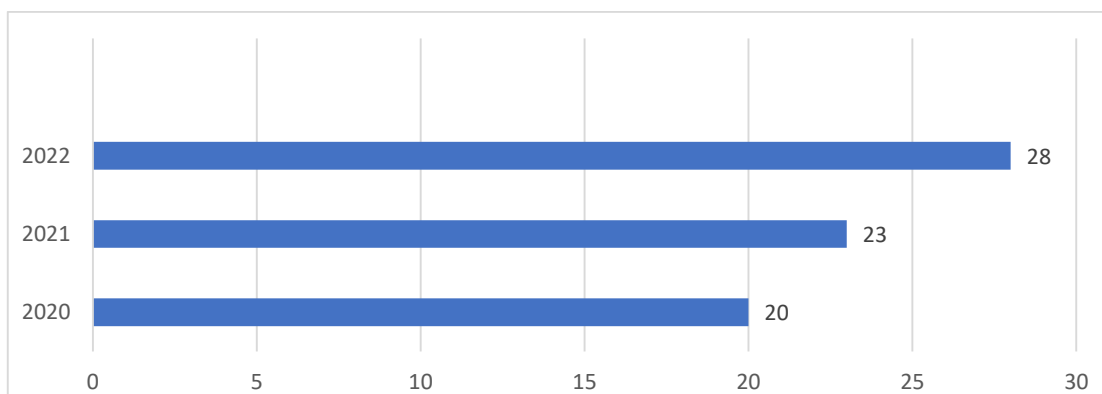


Figure 2: Ranking of FDI attraction in Thanh Hoa province compared to other provinces nationwide

Source: Thanh Hoa Province Department of Planning and Investment

As a result, Thanh Hoa was placed 20th nationally in terms of luring FDI in 2020; however, this ranking falls with time, falling to 23rd in 2021 and 28th in 2022.

(2) FDI capital structure

According to the totals by the end of 2022, the Thanh Hoa province Department of Planning and Investment has reported the following capital structure for FDI:

- The following chart illustrates the breakdown of FDI capital by investment sector in Thanh Hoa Province:

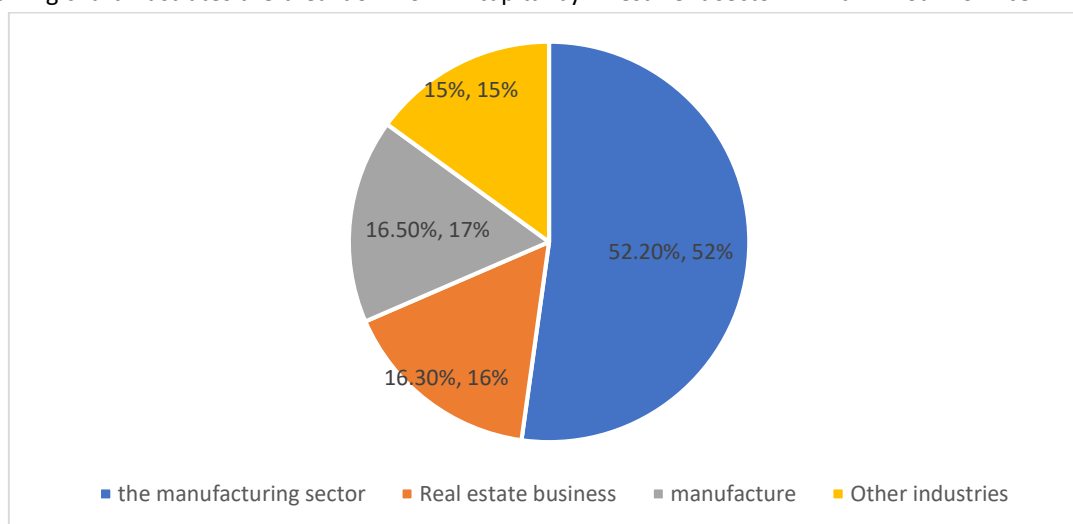


Figure 3: FDI structure in Thanh Hoa province by investment sector

Source: Thanh Hoa Province Department of Planning and Investment

Thanh Hoa province will have 164 projects with a total registered capital of 14.57 billion USD by the end of 2022. The processing and manufacturing sector leads the way in Thanh Hoa with 85 projects totaling 7.6 billion USD in registered capital, or 52.2% of the total accumulated registered capital. 27 projects were drawn to the production and distribution of electricity; their combined registered capital was 2.4 billion USD, or 16.5% of all cumulative registered capital. The third industry is real estate, which has 22 projects totaling \$2.37 billion in registered capital, or 16.3% of all registered capital. The remaining ones include businesses in the hospitality and food service sectors as well as those in the arts, entertainment, and so on.

- Regarding the structure of FDI capital in Thanh Hoa province by investment partners:

Table 2: FDI structure in Thanh Hoa province by investment partners

Targets	Project		Registered capital	
	various projects	Proportion (%)	Capital size (million USD)	Proportion (%)
Japan	86	52,4	6,66	45,7
Korea	37	22,6	1,6	10,98
Other countries	41	25	6,31	43,32
Total	164	100	14,57	100

Source: Thanh Hoa Province Department of Planning and Investment

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As a result, Thanh Hoa province will rank eighth in the nation in terms of attracting FDI by the end of 2022 with 164 FDI projects from 20 different nations (including Japan, Korea, Taiwan, China, Singapore, Canada, Germany, UK, Belgium, Hungary, and Australia).

Assessing the status of FDI attraction in Thanh Hoa province

Achievements:

- By the end of 2022, Thanh Hoa is the leading locality in the Central region in terms of FDI attraction with 164 projects, the total accumulated registered capital is up to 14.57 billion USD, accounting for 24% of the total registered capital of the country. whole area. This is the result of Thanh Hoa province promoting reform of administrative procedures, improving business investment environment, publicizing planning, completing infrastructure, training and preparing human resources.

- Thanh Hoa aggressively invests in technical infrastructure projects up to the project's border, such as: transportation, electricity, water, and communication; concurrently, the province supports efforts to maintain safety and order throughout project execution. Currently, Thanh Hoa is investing in a complete system of wharves and ports, including Nghi Son seaport with 62 ports including container ports and specialized ports, as well as connecting roadways such as coastal highways.

- In addition, Thanh Hoa continuously reviews, amends, supplements and promulgates a number of mechanisms and policies to create attractiveness and favorable conditions for attracting investment; improve the business investment environment.

Limit:

- Attracting FDI into Thanh Hoa is likely to slow down in 2021 and 2022. Compared to certain surrounding provinces, such Nghe An and Ha Tinh, the growth rate of FDI capital is lower. The volume of FDI into Thanh Hoa province has generally fallen between 2020 and 2022, both in terms of the number of newly awarded projects and the amount of registered capital.

- The results of luring investment into the province are positive but still not achieved as expected, not commensurate with the potential and advantages. The investment promotion of Thanh Hoa province has received attention, but lacks synchronization and strategy; investment promotion forms are not diversified; investment promotion force is small; some promotion staff's professionalism is low and not really active.

- According to the government's Provincial Competitiveness Report for the years 2020–2022, Thanh Hoa's provincial competitiveness tends to decline.

Table 3: Thanh Hoa's provincial competitiveness from 2020 to 2022

Targets	National ranking	Weight	Evaluate
Year of 2020	28	63,91	Rather
Year of 2021	43	63,21	Medium
Year of 2022	47	63,67	Medium

Source: Provincial Competitiveness Report, VCCI

- The coordination mechanism in handling administrative procedures according to the one-stop-shop mechanism, the one-stop-shop mechanism in some fields is still limited, and there is still a slow and late situation in the settlement of inter-related documents.

Reason

- The outbreak and the impact of the Covid-19 epidemic have caused the world economy to slow down, and many activities have been turned upside down, seriously affecting.

- Although Thanh Hoa offers many benefits and incentives for foreign investors, the lack of clean, large-scale premises and the still-limited industrial infrastructure are impediments in attracting foreign investment initially. the financiers.

- Many industrial clusters still have problems with investment procedures in terms of site clearance, planning adjustment...

- At the departmental level, Thanh Hoa province also has a number of constrained issues with regard to resolving issues for businesses and individuals, including avoiding accountability, "playing football" with issues, and "sanding" the field. its oversight.

4. CONCLUSIONS AND RECOMMENDATIONS

Through investment development and promotion operations, Thanh Hoa province has made a number of advances in recent years in its approach to investors and foreign capital sources. Provincial leaders' "acts" toward prospective nations go beyond only traveling and studying; they also hold marketing conferences that emphasize chances for collaboration and financial incentives. In order to conduct field research, learn about, and select investment prospects in crucial sectors, the province additionally organized receptions, worked, and brought numerous organizations, enterprises, and banks.

Thanh Hoa province needs to keep concurrently making the following fixes in order to attract more FDI:

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- The province's infrastructure planning needs to be properly implemented as the first practical remedy. Infrastructure planning must display the entire system of social infrastructure, including the banking system, audit..., and develop communication systems, in addition to the full range of works or work items, such as the transportation system, power system, water supply, drainage, and environmental sanitation systems.

- The province must focus on fostering favorable business environments, assisting firms, and regularly engaging in dialogue and meetings with businesses to better understand the issue and act quickly on their suggestions and offers.

- Continue to comply with current regulations on attracting foreign direct investment and advise the Government on renewing the mechanism to attract FDI capital and selecting effective investment plans. Thanh Hoa needs to consider removing barriers to investment and business activities due to overlapping, conflicting and unreasonable legal regulations; promoting digital transformation in sync with administrative reform; promote international cooperation activities associated with local reform implementation.

- Thanh Hoa needs to effectively implement financial market-related content, regulations to support FDI businesses' production and business operations, and keep focusing on helping them overcome the negative effects of the Covid-19 pandemic.

- Pay special attention to luring capital and technologically advanced nations. Foreign direct investment is attracted by multilateralization and diversification from new prospective partners and markets. Additionally, giving current partners and markets like Japan, Korea, Singapore, and Taiwan prominence...

REFERENCES

- 1) Political Bureau (2020), Resolution No. 58-NQ/TW "On construction and development of Thanh Hoa province to 2030, vision to 2045.
- 2) Government (2023) "Decision No. 153/QĐ-TTg approving the master plan of Thanh Hoa province for the period of 2021 - 2030, with a vision to 2045"
- 3) Government (2019), Resolution 02/ND-CP dated January 1, 2019 on continuing to perform key tasks and solutions to improve the business environment and enhance national competitiveness in the year. 2019 and orientation to 2021, Vietnam.
- 4) Foreign Investment Agency (2022), Annual report on foreign direct investment (2018 - 2022): Ministry of investment planning.
- 5) Hoang Van Cuong (2023), Improving the business environment, effectively attracting FDI inflows, Financial Journal period 1+2 January 2023.
- 6) Husmann Christine and Kubik Zaneta (2019), foreign direct investment in the African food and agriculture sector: trends, determinants and impacts University of Bonn.



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Students' Writing Ability and Their Attitude: Examining the Effect of Online PjBL



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ABSTRACT: This study examines the effect of online PjBL on students' writing abilities and their attitudes toward online PjBL. A mixed method was employed in this research. 72 students majoring in English at a university in Indonesia took part as participants with informed consent. Two groups—control and experimental—were formed. The experimental group utilized online PjBL, whereas the control group used traditional teaching. Tests, questionnaires, and interview questions were employed to collect data. The collected data were analyzed both quantitatively and qualitatively. The findings of the research showed that the mean score of the experimental group was higher than that of the control group. Furthermore, an independent sample t-test revealed that the sig. value was $0.023 = 0.05$. It indicated that there is a significant effect of online PjBL on students' writing ability. Furthermore, the students showed positive attitudes toward the implementation of online PjBL. It is indicated by the students' responses to the questionnaire, where thirty out of thirty-six students indicated that they strongly agree that the online PjBL makes them more comfortable writing an argumentative essay. Seven out of ten students interviewed said peer feedback activities improve writing the most in online PjBL. Recommendations for further researchers were also provided.

KEYWORDS: Students' Writing Ability, Attitude, Online PjBL (Project-Based Learning), Effect, Examining

I. INTRODUCTION

Over recent years, the widespread adoption of mobile devices and advancements in wireless technologies have revolutionized the landscape of online learning. This transformation has made e-learning not only more accessible and convenient but also highly personalized and adaptable to the needs of individual learners (Liu & Yu, 2022; Veeramanju, 2022). In tandem with this digital evolution, English has solidified its position as the global lingua franca. Its prominence is not merely a linguistic phenomenon; it reflects broader socio-economic and technological trends. Due to the surging waves of globalization and internationalization over recent years, English has become pivotal in academia, the electronics industry, global commerce, and cutting-edge technology. Integrating online learning with other efficacious instructional methods, such as Project-Based Learning (PjBL), holds the potential to elevate the quality of education and significantly enhance learning outcomes (Chistyakov et al., 2023; Maryati et al., 2022; Sugianto et al., 2020). Online PjBL not only underscores the role of social interaction and collaboration in the learning process but also cultivates a culture where students are encouraged to be independent, creative thinkers. By fostering such an environment, students are not just gaining knowledge; they are being equipped with the skills and mindset to achieve greater academic heights. Additionally, this method promotes lifelong learning, preparing students to adapt and thrive in an ever-evolving global landscape (Chen, 2019; Susanti et al. 2023).

There has been a marked uptick in research efforts aimed at understanding the effects of PjBL in the realms of EFL (English as a Foreign Language) and ESL (English as a Second Language). This growing interest underscores the significance and potential transformative power of PjBL in language education. To illustrate, Sari & Prasetyo (2021) embarked on a comprehensive study to investigate how PjBL might influence students' reading skills. Their study threw light on the nuances of integrating project-based techniques into reading comprehension modules. In a similar vein, Winasih et al. (2019) delved into the realm of spoken English, attempting to ascertain the effectiveness of PjBL in enhancing speaking proficiency among learners. Their findings have important implications for educators aiming to bolster oral communication skills through innovative teaching methods. Shifting the focus to another critical aspect of language learning, Zahro & Mitarlis (2021) implemented PjBL strategies to foster and enhance students' creative thinking within the EFL environment. Their research is particularly crucial as it merges linguistic competencies with cognitive skill enhancement, offering a broader perspective on the multifaceted advantages of PjBL. However, a significant gap in the literature pertains to students' attitudes and perceptions. The studies mentioned above, while invaluable, do not delve deeply into how students feel about PjBL or their levels of engagement and satisfaction with this teaching methodology. Understanding student attitudes is vital because it can greatly influence the outcomes and effectiveness

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of the teaching approach. Moreover, it is worth noting that much of the preceding research has been grounded in traditional research methodologies. In the rapidly evolving landscape of education research, there is an imperative need for more contemporary, perhaps mixed-method, approaches that capture the complexities of modern classroom environments and diverse student populations.

To the authors' best knowledge, there is a noticeable gap in research concerning the impact of online PjBL in an online setting on students' writing proficiency, especially within the Indonesian milieu. Moreover, the exploration of students' perceptions and attitudes towards the deployment of online PjBL remains relatively uncharted in this context. The present study aims to bridge this knowledge gap. It does not just offer insights into the potential benefits of online PjBL on enhancing students' writing skills; it also delves into the empirical realm by presenting data on students' sentiments and perspectives regarding the adoption of online PjBL in EFL classrooms. In doing so, this research contributes substantially to the growing body of literature, highlighting both the educational outcomes and the experiential aspects of learners in the modern, digital-centric educational environment. The primary objective of the present study is to meticulously evaluate the impact of online PjBL in an online environment on students' writing prowess. Additionally, it seeks to delve into students' perceptions and feelings regarding the adoption and execution of online PjBL methodologies. Understanding these dynamics is paramount. The results of this research will furnish educators and learners alike with invaluable insights, aiding them in navigating and addressing challenges associated with teaching and learning writing skills at the tertiary level. By gaining a deeper comprehension of students' experiences and attitudes toward online PjBL, educators are better positioned to tailor or even innovate instructional methods. Such customization ensures that the teaching approaches resonate more effectively with the students' preferences and requirements, thus enhancing the overall educational experience.

II. REVIEW OF RELATED LITERATURE

The Efficacy of online Project Based learning

In online PjBL practices, web quests, Learning Management Systems (LMS), emails, blogs, online forums, and social networking can be utilized to look up information, share or change ideas, work together, or cooperate. As such, students are able to do research, offer hypotheses and explanations, engage in intellectual discourse, question the assumptions of others, and test the viability of alternative perspectives (Bell, 2010; Krajcik et al., 1994; Leggett & Harrington, 2021).

Pertinent to the efficacy of online PjBL Aghajani & Adloo, (2018) revealed that the use of online PjBL via telegram application have a significant effect on students writing ability particularly in all five dimensions of writing (i.e., content, organization, vocabulary, language use and mechanics). Besides, they also found that the students had positive attitude toward using telegram cooperative learning. In addition, Chanpet et al., (2020) provide evident of the effectiveness of embedding technology in PjBL activities. According to their findings, technology served as a stepping stone for both student and teacher engagement. Learners and teachers both benefited from the system's built-in communication and file-sharing features as well as its ability to facilitate both formative and summative evaluations of student progress. Post-implementation measurements of PBL knowledge and ability were much higher for the online part, and student feedback was overwhelmingly favorable.

Guo et al., (2021) investigated the students' perspective of the online PjBL toward students' social presence, cognitive presence, and academic performance. They found that certain levels and sub-levels of students' cognitive presence, as well as certain components and sub-components of their social presence, were found to have a favorable association with the students' academic achievement. Meanwhile, Lin, (2018) incorporated group awareness (GA) and peer evaluation in computer-supported collaborative learning (CSCL's) project-based learning environment in her research. The findings demonstrated that the experimental class's group awareness and peer assessment (GAPE) moderately reduced the free-rider effect and significantly increased both socially shared regulation of learning (SSRL) and self-regulated learning (SRL), in comparison to the NO-GAPE condition (i.e., the control group). Additionally, the results of this study indicate that perceived SSRL can properly predict SRL. In the same vein, Abuhmaid, (2020) examined the Jordanians students' perception toward the impact of online learning environment on project-based teaching method. The findings of the research indicated that students (both online and in-class) have favorable attitudes regarding learning through project-based learning. It was interesting to note that the results showed that students who learned in-person had a greater opinion of project-based learning than students who learned online.

In the Indonesian context, Salma (2020) investigated the effect of PjBL during the online learning on the student's learning achievement. She concluded that Project-based blended learning improves student achievement in experimental and control classrooms, thus it has a significant impact. In a similar investigation, Sudira et al., (2022) measured the effectiveness of online PjBL combined with evaluative method (i.e., plan, do, and check (PDCE)) during training and coaching of vocational teachers. They found that the application of online PjBL combined with PDCE approach is effective to improve the understanding of the trainee on the material presented during the training session.

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The Online Teaching for Writing

The global pandemic triggered an unprecedented shift in the education sector, pressing educators worldwide to transition from traditional classroom teaching to online learning platforms (Marzuki et al., 2023). This sudden and massive shift not only impacted the methodologies and strategies educators employ but also transformed the very essence of how students absorb and interact with their educational content.

Central to this transformation has been the role of technology. It has become the backbone, facilitating the continuity of education in a time of social distancing and lockdowns. In this new landscape of online education, the aptitude to harness the potential of digital tools is no longer just an advantage—it is a necessity. For effective online instruction, educators must be adept at navigating and employing various online learning applications, ranging from Zoom and Google Meet to Learning Management Systems (LMS) and Google Classroom, among others (Alsudais et al., 2022; Anggraini et al., 2022). Focusing on the domain of writing, platforms like Google Meet and Google Classroom have emerged as instrumental resources. These platforms are not just mediums for virtual communication; they are enablers, helping students hone their writing skills and maintain their enthusiasm for the subject. This sentiment is echoed by research from Shelvam et al. (2021), which underscores the effectiveness of these platforms in bolstering students' writing prowess and motivation levels.

In addition, tools like Google Docs have been repurposed beyond their primary functions. As Neumann & Kopcha (2019) found, when used in online writing classes, Google Docs serves as a dynamic platform for feedback activities. By leveraging the collaborative nature of Google Docs, where both peers and instructors can provide real-time input, students witness tangible improvements in their writing outcomes. Moreover, innovative applications like Jam Board are paving the way for new techniques in the brainstorming process. As Khuong posits, students can harness Jam Board's capabilities to generate ideas via digital mind mapping, setting a strong foundation before they commence their writing tasks. In conclusion, as technology continues to evolve and interweave itself into the fabric of education, it is imperative for educators to keep pace. This is not just about staying current; it is about ensuring that the educational journey is enriched, interactive, and adaptive to the demands of our changing world.

III. METHOD

A Mixed-method design was employed in this research. It because two types of data were required to be collected those are quantitative and qualitative data. In more detail, the current research applied Mixed-method with Sequential Explanatory Design (SED) as advocated by Morse (2016). In the SED design, the researchers collect the quantitative data and the analysis first followed by the qualitative data and the interpretation. The quantitative data was obtained from the result of the pretest and posttest of the students' writing. While qualitative data was obtained from the result of an open-ended questionnaire and interview.

The participant of this research was second-year students of English Department at a University in Indonesia. There were 72 students who served as participants in the current research in which 36 students were treated as a control group and the rest were treated as an experimental group. Those students were enrolled in the writing course provided by the English Department of the University. Informed consent was applied prior to taking the participants into this research. It was done by asking permission from the participants and explaining the purpose of this study. Therefore, all participants voluntarily joined the research.

The data were collected by employing some instruments following the research question that would be answered. The first research question dealing with the effect of online PjBL. The instrument used was a test that consisted of a pretest and a posttest. The second research question related to the students' attitude toward the implementation of online PjBL. The instrument used were a questionnaire and an interview. Both questionnaire and interview questions were constructed in line with the procedure of online PjBL that the students have experienced.

The collected data were then analyzed with different approaches. The data relating to the quantitative was analyzed statistically by using IBM SPSS 26. The data relating to the qualitative was analyzed by crosscutting and integrating the result of the instruments (i.e questionnaire and interview) and explaining the result in the narrative form as detailed as possible. To get the conclusion, both quantitative and qualitative data were integrated and interpreted as a final conclusion.

IV. FINDINGS AND DISCUSSIONS

Before implementing the online PjBL, the instructor distributed an online writing pretest to both the control group and the experimental group. It was done to measure the initial ability of both groups. The following table presented the result of their writing ability.

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Table 1. The result of the pretest of both the control group and the experimental group.

		Pretest Result			
Pretest Score	Group	N	Mean	Std. Deviation	Std. Error Mean
	Control Group	36	71.67	5.976	.996
	Experimental Group	36	71.53	5.185	.864

Regarding the table above, there were 36 students of both the control and experimental group who attended the writing pretest respectively. As can be seen, it is clear that the pretest score of both groups almost at the same level. In the control group, the mean score was 71.67 and the pretest score of the experimental group was 71.53. It indicated that the writing ability of both groups was comparable.

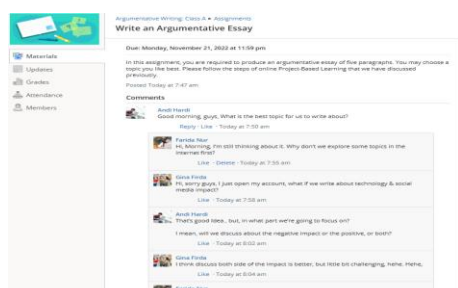
Research Procedure

Both the control and experimental groups underwent a writing ability test. Following this, the experimental group experienced the online Project-Based Learning (PjBL) method. Meanwhile, the control group used a traditional teaching approach, where they were instructed to write an argumentative essay and submit it by the deadline. The subsequent charts outline the research procedure.

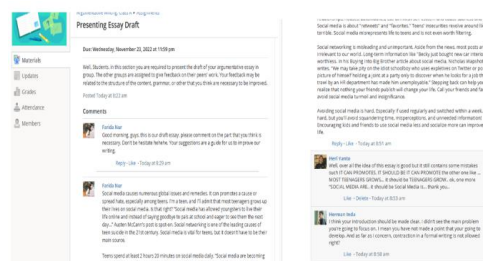


Chart. 1 The Procedure of treatment of both groups

In the above chart, the control group's activity appeared consistent. Students were introduced to their task—writing an argumentative essay. After understanding the assignment, they worked independently for a set duration before submitting their essays. On the other hand, the experimental group followed a different approach, integrating online Project-Based Learning (PjBL). Initially, students planned out their writing projects, selecting topics and outlining the process. They then collaborated in small groups of two or three. Within these groups, they discussed their essay structure and exchanged feedback, evidence of which can be found in their LMS chat box (refer to Fig. 1). Once their writing projects were completed, the groups presented their work in an online forum. Peer groups listened and subsequently offered feedback, especially focusing on essay organization, grammar, and punctuation (see Fig. 2). Using this feedback, students made revisions. The instructor further guided them on improvements. Finally, students submitted their revised essays to the instructor for grading.



Picture 1. Students' chat box in LMS while discussing the topic of their Writing



Picture 2. Students are giving feedback to their peers in LMS

After a seven-week series of activities, the instructor gave a posttest, which was identical to the pretest. Students were tasked with writing a five-paragraph argumentative essay. The table below presents the statistical analysis of the writing scores from both groups.

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Table 2. The result of the Posttest of both the control and experimental group

Posttest Score	Group	Result of Posttest			
		N	Mean	Std. Deviation	Std. Error Mean
	Control Group	36	77.36	6.379	1.063
	Experimental Group	36	80.56	5.179	.863

From the table, both the control and experimental groups each had 36 students attending the posttest. The control group's mean score was 77.36, up from a pretest score of 71.67. The experimental group showed an increase from 71.53 in the pretest to 80.56 in the posttest. While both groups demonstrated improvement, the experimental group's mean score increase was more pronounced than the control groups. This suggests that students in the experimental group performed better than those in the control group.

The effect of Online PjBL on Students' Writing Ability

To assess the impact of online PjBL on students' writing ability, we applied an independent sample t-test. Prior to this, a normality test was conducted using IBM SPSS 26 to ensure the data distribution was appropriate for our analysis. This test helps decide the type of statistical formula to use, either parametric or non-parametric. Data is deemed normally distributed if the significance result exceeds 0.05. The results of the normality test, as processed by IBM SPSS version 26, are presented in the table below.

Table 3. The result of normality tests

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.227	36	.000	.867	36	.000
Posttest	.209	36	.000	.902	36	.004

From the table provided, the Shapiro-Wilk test gives a significance value of 0.000 for the pretest, which is below the 0.05 threshold. Similarly, the posttest shows a significance value of 0.004, also below the 0.05 threshold. Given that both pretest and posttest significance values are under 0.05, the data is concluded to be not normally distributed.

Table 4 The result of the independent sample t-test

Posttest Score		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
		Equal variances assumed	2.200	.143	-2.333	70	.023	-3.194	1.370	-5.926
Equal variances not assumed			-2.333	67.166	.023	-3.194	1.370	-5.928	-.461	

Given the data's normal distribution, an independent sample t-test was employed. If the significance value is less than 0.05, the data is considered significant. The analysis showed a significance value of 0.023 (for equal variances assumed), which is below the 0.05 threshold. Thus, it is evident that online PjBL had a significant effect on the students' ability to write an argumentative essay.

The students' attitude toward the implementation of Online PjBL.

To gauge the students' attitudes towards the implementation of online PjBL, a questionnaire was distributed via Google Forms to the experimental group of 36 students. Their responses are presented in the table below.

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Table 5. The result of the questionnaire

No	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Planning sessions of online PjBL help me to organize ideas to write an argumentative essay	29	7	0	0	0
2	Working in a group provided me with more ideas about writing an argumentative essay	28	8	0	0	0
3	I feel confident presenting my writing product in front of my friends	29	7	0	0	0
4	The peer feedback activity gives more insight to improve my writing	30	6	0	0	0
5	Revising activity gives me a chance to improve my writing product	28	8	0	0	0
6	I feel confident about the result of my writing to be submitted to the teacher	29	7	0	0	0

From the provided table, the majority of students expressed favorable views on the online PjBL implementation during their writing course. 29 of the 36 students strongly believed that the planning sessions significantly aided in organizing their ideas prior to writing, with the remaining 7 in agreement. When it came to the benefits of group work, 28 students felt it endowed them with a richer pool of ideas for their argumentative essays, while 8 others agreed with this sentiment. Confidence in presenting their essays in front of peers was high, with 29 students strongly agreeing and 7 agreeing. Additionally, feedback was highly valued; 30 students strongly felt that feedback deepened their understanding and honed their writing skills, with 6 others in agreement. In terms of revisions, 28 students strongly believed they had sufficient opportunities to polish their work, and 8 concurred. Lastly, 29 students were highly confident in submitting their final pieces to the instructor, with the remaining 7 agreeing. Across all items, it is noteworthy that no students harbored any negative attitudes toward the online PjBL approach.

The result of the interview

Ten students from the experimental group were interviewed. The selected students were those who have a writing score above the mean score of the post-test. It would be better if all the students in the experimental group were interviewed. However, for the reason of intensity and accuracy of the experience manifested after the implementation of online PjBL, it was decided to interview only ten students that have a higher score than the mean score of the posttest. There were three questions employed to the students.

Q1: In what way does online PjBL improve your writing ability?

In responding to the question, seven students have the same responses that their writing gets improvement after they experienced online PjBL because they have enough time to prepare their topic before starting to write. Besides, they also argue that in the discussion session they many insights about what and how to write an argumentative essay with various topics. Two of five responses were presented in the following excerpt.

AH: I think my writing improve after following online PjBL because I have time to prepare my topic in the planning session and discussion session.

FN: My writing getting better because we have time to discuss in the group about what and how to finish our task to write argumentative writing.

While three students argue that their writing gets better after experiencing online PjBL because they get many feedbacks from their peers and instructor. The following excerpt showed their responses.

GF: My writing gets improvement because of the feedback provided by our friends and also the teacher.

HY: I use the feedback from my friends to revise my writing till it becomes better than the previous one.

HI: In online PjBL, we were provided with feedback from friends and also the teacher. With that feedback, we improve our writing. Besides, the feedback becomes our memory to write better in the future.

Q2: In what part of the activity of Online PjBL do you think help you in writing an argumentative essay?

Related to the second question, seven out of ten students responded that peer feedback helps them to improve their writing. They argued that the feedback from their peer, as well as the teacher, make them realize the weaknesses of their writing either the construction of the content or the grammatical mistake they produced.

Three of seven responses were presented in the following excerpt.

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FH: I think the most interesting part is the peer feedback session. In that session, I and my friends know the mistake that we made. So, we can directly revise the mistake to improve our writing product.

MG: The peer feedback session is the most important part for us because we can identify the mistakes that we overlooked. The mistake can be related to the structure of the essay and the grammatical mistake we made.

MH: To my experience during the learning process in online PjBL, the feedback from my friends and teacher gives more insight about writing an essay. In that session, I got more knowledge about what to consider in writing an essay. I use the feedback as my guidance to improve my writing for the next task.

Among the ten students interviewed, three students reported that working in a group provide them with more help in writing an essay. They argued that working in a group expanded their knowledge about the topic, and how the topic should be framed and developed into a written form. The following excerpt presented their responses to the question:

TD: I love to study together, so I think the group discussion is the best part that improves my writing. In this session, I get more insight about the topic that would be written.

GF: The group discussion provided me with a way how to start my writing and give me a knowledge stock to be developed in the written form.

HM: I got my best experience in writing when I and my friends discussed together the topic, how to develop the topic, and presented it in our writing.

Q3: Will you apply online PjBL for your next learning experiences?

They have the same expressions when responding to the above question. All of them agree to use the steps in the online PjBL to figure out their next assignment. They argued that the steps of online PjBL provide a massive benefit for their learning experiences. They mentioned that some of the benefits they got were knowledge improvement due to the sharing session, the improvement of their confidence toward the accomplished assignment, and the ability to monitor their progress as the result of peer and teacher feedback. Four of their reports were presented in the following excerpt unveiling their responses.

MG: I will follow the steps online PjBL that I experienced during the process of learning to complete my next task. The steps of online PjBL provided me with a guide to approaching the assignment that should be accomplished. Besides, it fits best for me because I can get more insight through the sharing session with friends.

HY: To me, the steps in online PjBL really help. Therefore, I am going to use it to complete my task during the learning process.

FN: Sometimes, I am not confident to submit my writing assignment to the teacher because I feel there are many mistakes in it. But having discussed it with friends and get peer feedback from the teacher I feel more confident to submit it. Therefore, I will use it for my next learning.

AH: I am going to use the steps of online PjBL for my next assignment because I can monitor my progress through the feedback given by peers and the teacher.

In line with the students' responses to the three-interview question proposed by the researcher, the students showed a positive attitude toward the implementation of online PjBL in writing an argumentative essay. These findings support the data revealed from the questionnaire that indicated that students enjoy the implementation of online PjBL in their learning process particularly in completing their writing assignments.

V. DISCUSSION

This study was principally designed to evaluate the efficacy of online PjBL in writing instruction and to capture students' perceptions of its implementation. Through meticulous statistical scrutiny, it was determined that students exposed to the online PjBL method achieved notably higher results, with a posttest average score of 80.56. This is in contrast to the control group, which achieved an average of 77.36. This disparity in scores clearly indicates that the online PjBL cohort surpassed the performance of those in the traditional setting. Furthermore, a deep dive into the results of the independent sample t-test, showing a significance value of 0.023—well below the 0.05 benchmark—offers compelling evidence of the potency of online PjBL in bolstering students' proficiency in crafting argumentative essays.

Building on this foundation, a number of preceding studies, including those by Aghajani & Adloo (2018), Praba' et al. (2018), Syarifah & Emiliyasi (2019), and Wardani et al. (2021), have underscored the value of PjBL in the realm of writing instruction. A standout contribution was made by Wardani et al. (2021), who undertook a comprehensive exploration of how PjBL influences various facets of writing, spanning content, organization, structure, vocabulary, to mechanics. Furthermore, their research suggested that PjBL acts as a catalyst, nurturing students' abilities in critical thinking, creativity, and fostering a collaborative ethos. Interestingly, while their research was extensive, Wardani et al. (2021) did not venture into evaluating

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students' reactions post the PjBL experience. This is where our research bridges the gap, offering a nuanced understanding of students' sentiments after their engagement with online PjBL, which will be elaborated upon in the ensuing segments.

In addition to its core objectives, this study delved into discerning students' sentiments post-implementation of online PjBL. A clear trend emerged from the collected data: students felt positively influenced by the online PjBL approach. This assertion is corroborated by their feedback across both structured questionnaires and more open-ended interview sessions. The questionnaire was structured with six targeted items that delved into the nuances of online PjBL, with responses anchored on a Likert scale. A significant chunk of participants resonated with the "strongly agree" category across these statements (as detailed in table 2). Significantly, the fourth item stood out, attracting affirmatives from 30 of the 36 participants. This feedback accentuated the importance students attributed to peer evaluations, shedding light on its pivotal role in enriching their writing journey. The inference is clear: the peer review component within the online PjBL framework served as a cornerstone in students' writing endeavors, fostering growth and self-awareness.

Delving deeper, the interview results furnished a more nuanced understanding of students' viewpoints. These interviews, targeting those whose scores exceeded the posttest mean, revealed an overwhelming appreciation for the structured approach of online PjBL. When probed about which component of online PjBL left the most indelible mark on their writing journey, the consensus tilted heavily towards the peer feedback sessions. Students recounted how these sessions widened their horizons, bolstered their self-assurance, and provided a tangible roadmap to trace their writing enhancements. Corroborating these findings, research by Jin et al. (2022) underlined the instrumental role of peer feedback in bolstering writing acumen in the context of higher education. In a similar vein, Banaruee et al. (2018) accentuated the transformative power of recast feedback in amplifying student writing prowess.

Upon meticulous examination, evaluation, and contrasting of the data presented, our findings unequivocally suggest the efficacy of online PjBL in augmenting students' writing proficiencies. Additionally, the overwhelmingly positive inclination displayed by students towards the pedagogical approach of online PjBL is evident. In light of these conclusions, we earnestly recommend the integration of online PjBL as a potent alternative in pedagogical strategies, particularly within higher education writing curricula.

VI. CONCLUSION

This study aimed to assess the potential benefits of online PjBL within a writing course framework and to capture students' perceptions regarding this teaching strategy. The results unequivocally demonstrated the efficacy of online PjBL. This was evident from the significant rise in mean scores from the pretest to posttest for the experimental group, which underwent the online PjBL intervention. Their scores surged from an initial 71.53 to a commendable 80.56 post-intervention. Conversely, while the control group also exhibited an improvement, their ascent from a mean score of 71.67 to 77.36 in the post-test was less pronounced compared to the experimental group. This clearly underlines the superior efficacy of online PjBL over conventional teaching methods employed for the control group. Reinforcing this conclusion, the statistical significance from the independent sample t-test, having a value of 0.023 (which is less than the accepted threshold of 0.05), points towards the tangible impact of online PjBL on honing students' capabilities in crafting argumentative essays. Further enriching these findings, students' feedback unveiled an overwhelmingly positive disposition towards online PjBL, particularly lauding the peer feedback sessions. They opined that these sessions armed them with deeper insights, bolstered their confidence in their writing, and offered them a lens to discern and rectify their errors more effectively.

In reflecting on the constraints of the current study, several suggestions emerge for future researchers exploring similar topics. Firstly, a larger participant sample is advisable, ensuring more representative and comprehensive data. Additionally, delving into the potential influence of gender can yield nuanced insights into perceptions surrounding the use of online PjBL. It would also be valuable to investigate the challenges faced by both educators and students when implementing this approach. Importantly, for the successful deployment of online PjBL, it is crucial that educators are well-versed in its mechanisms, ensuring that its potential benefits are fully realized.

REFERENCES

- 1) Abuhmaid, A. M. (2020). The efficiency of online learning environment for implementing project-based learning: Students' perceptions. *International Journal of Higher Education*, 9(5), 76–83. <https://doi.org/10.5430/ijhe.v9n5p76>
- 2) Aghajani, M., & Adloo, M. (2018). The effect of online cooperative learning on students' writing skills and attitudes through telegram application. *International Journal of Instruction*, 11(3), 433–448. <https://doi.org/10.12973/iji.2018.11330a>
- 3) Alsudais, A. S., Alghamdi, A. S., Alharbi, A. A., Alshehri, A. A., Alzhirani, M. A., Keskin, S., Şahin, M., & Althubaiti, A. M. (2022). Social anxiety in E-Learning: Scale validation and socio-demographic correlation study. *Education and*

Students' Writing Ability and Their Attitude: Examining the Effect of Online PjBL

- Information Technologies*, 27(6), 8189–8201. <https://doi.org/10.1007/s10639-022-10919-7>
- 4) Anggraini, M. P., Anugerahwati, M., Sari, R. N., Miranty, D., Kurniasih, & Iswahyuni. (2022). The ICT Use of Informal Digital Learning in Enhancing EFL University Students' English Performance. *Call-Ej*, 23(3), 94–114.
 - 5) Asrul, Nurmahyuni, Rajagukguk, S. F., Sitepu, V. O., Siregar, P. M., & Novri, A. (2021). The Effect of Project-Based Learning on Students' Achievement in Writing Narrative Text Universitas Prima Indonesia. *Print) Journal of English Language and Education*, 6(2), 2021.
 - 6) Banaruee, H., Khatin-Zadeh, O., & Ruegg, R. (2018). Recasts vs. direct corrective feedback on writing performance of high school EFL learners. *Cogent Education*, 5(1). <https://doi.org/10.1080/2331186X.2018.1455333>
 - 7) Bell, S. (2010). Project-Based Learning for the 21st Century: Skills for the Future. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39–43. <https://doi.org/10.1080/00098650903505415>
 - 8) Chanpet, P., Chomsuwan, K., & Murphy, E. (2020). Online Project-Based Learning and Formative Assessment. *Technology, Knowledge and Learning*, 25(3), 685–705. <https://doi.org/10.1007/s10758-018-9363-2>
 - 9) Chen, J. (2019). Designing online project-based learning instruction for EFL learners: A WebQuest approach. *MEXTESOL journal*, 43(2), 1-7. <http://hdl.handle.net/20.500.11937/75369>
 - 10) Chistyakov, A. A., Zhdanov, S. P., Avdeeva, E. L., Dyadichenko, E. A., Kunitsyna, M. L., & Yagudina, R. I. (2023). Exploring the characteristics and effectiveness of project-based learning for science and STEAM education. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(5), em2256. <https://doi.org/10.29333/ejmste/13128>
 - 11) Durga, S. S., & Rao, C. S. (2018). Developing students' writing skills in English. *Journal for Research Scholars and Professionals of English Language Teaching*, 2(6), 1–69. <https://www.researchgate.net/publication/325489625%0ADeveloping>
 - 12) Guo, P., Saab, N., Wu, L., & Admiraal, W. (2021). The Community of Inquiry perspective on students' social presence, cognitive presence, and academic performance in online project-based learning. *Journal of Computer Assisted Learning*, 37(5), 1479–1493. <https://doi.org/10.1111/jcal.12586>
 - 13) Jin, X., Jiang, Q., Xiong, W., Feng, Y., & Zhao, W. (2022). Effects of student engagement in peer feedback on writing performance in higher education. *Interactive Learning Environments*, 1–16. <https://doi.org/10.1080/10494820.2022.2081209>
 - 14) Krajcik, J. S., Blumenfeld, P. C., Marx, R. W., & Soloway, E. (1994). A Collaborative Model for Helping Middle Grade Science Teachers Learn Project-Based Instruction. *The Elementary School Journal*, 94(5), 483–497. <https://doi.org/10.1086/461779>
 - 15) Kuteeva, M. (2020). Revisiting the 'E' in EMI: students' perceptions of standard English, lingua franca and translanguaging practices. *International Journal of Bilingual Education and Bilingualism*, 23(3), 287–300. <https://doi.org/10.1080/13670050.2019.1637395>
 - 16) Leggett, G., & Harrington, I. (2021). The impact of Project Based Learning (PBL) on students from low socio economic statuses: a review. *International Journal of Inclusive Education*, 25(11), 1270–1286. <https://doi.org/10.1080/13603116.2019.1609101>
 - 17) Lin, J. W. (2018). Effects of an online team project-based learning environment with group awareness and peer evaluation on socially shared regulation of learning and self-regulated learning. *Behaviour and Information Technology*, 37(5), 445–461. <https://doi.org/10.1080/0144929X.2018.1451558>
 - 18) Liu, M., & Yu, D. (2022). Towards intelligent E-learning systems. *Education and Information Technologies*, 1-32. <https://link.springer.com/article/10.1007/s10639-022-11479-6>
 - 19) Morse, J. M. (2016). *Mixed method design: Principles and procedures*. Routledge.
 - 20) Maryati, S., Lestari, G. D., & Riyanto, Y. (2022). The Effectiveness of Mentoring in the Implementation of the Project-based Learning (PjBL) Model in the Independent Curriculum for PAUD Educators. *European Journal of Education and Pedagogy*, 3(6), 12-18. <https://doi.org/10.24018/ejedu.2022.3.6.471>
 - 21) Marzuki, Widiati, U., Rusdin, D., Darwin, & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. *Cogent Education*, 10(2), 2236469. <https://doi.org/10.1080/2331186X.2023.2236469>
 - 22) Neumann, K. L., & Kopcha, T. J. (2019). Using Google Docs for Peer-then-Teacher Review on Middle School Students' Writing. *Computers and Composition*, 54, 102524. <https://doi.org/10.1016/j.compcom.2019.102524>
 - 23) Praba, L. T., Artini, L. P., & Ramendra, D. P. (2018). Project-based learning and writing skill in EFL: are they related? *SHS Web of Conferences*, 42, 00059. <https://doi.org/10.1051/shsconf/20184200059>
 - 24) Salma, W. A. (2020). Indonesian Journal of Informatics Education The Effectiveness and effect of Project-Based Blended Learning on Student Achievement in Online Learning. *Indonesian Journal of Informatics Education*, 4(1), 1–8.
 - 25) Sari, D. M. M., & Prasetyo, Y. (2021). Project-based-learning on critical reading course to enhance critical thinking skills. *Studies in English Language and Education*, 8(2), 442–456. <https://doi.org/10.24815/siele.v8i2.18407>
 - 26) Shelvam, H., Jayarajah, K., Kandasamy, S., Xiao, S., Durairaj, Y., Singh, C. K. S., & Maniam, M. (2021). An Investigation on the Learners' Perceptions and Experiences in Engaging with Online Writing Lessons Conducted via Google Classroom. *International Journal of Asian Social Science*, 12(1), 13–25. <https://doi.org/10.18488/5007.v12i1.4389>
 - 27) Sudira, P., Nurtanto, M., Masrifah, N., Nurdianah, E., & Mutohri, F. (2022). Online Project-Based Learning (O-PjBL):

Students' Writing Ability and Their Attitude: Examining the Effect of Online PjBL

- Effectiveness in Teachers Training and Coaching in Vocational Education. *Journal of Education Technology*, 6(2), 326–337. <https://dx.doi.org/10.23887/j>
- 28) Sugiyanto, S., Setiawan, A., Hamidah, I., & Ana, A. (2020). Integration of mobile learning and project-based learning in improving vocational school competence. *Journal of Technical Education and Training*, 12(2), 55-68. <https://penerbit.uthm.edu.my/ojs/index.php/JTET/article/view/5470>
- 29) Susanti, A., Rachmajanti, S., Suryati, N., & Astuti, U. P. (2023, March). Online Project-Based Learning and Critical Thinking Skills: A Case Study in Tertiary Education. In *International Joint Conference on Arts and Humanities 2022 (IJCAH 2022)* (pp. 992-1002). Atlantis Press. https://doi.org/10.2991/978-2-38476-008-4_105
- 30) Syarifah, E. F., & Emiliasari, R. N. (2019). Project-Based Learning To Develop Students' Ability and Creativity in Writing Narrative Story. *Indonesian EFL Journal*, 5(1), 85. <https://doi.org/10.25134/ieflij.v5i1.1627>
- 31) Veeramanju, K. T. (2022). Transformation in Education through E-Learning-A Case Analysis on Byju's–The Learning App using the ABCD Framework. *International Journal of Case Studies in Business, IT and Education (IJCSBE)*, 6(2), 945-957. <https://doi.org/10.47992/IJCSBE.2581.6942.0242>
- 32) Wardani, N. K. S., Artini, L. P., & Ramendra, D. P. (2021). Project-Based Learning in Teaching EFL Writing: An Analysis of the Effect on The 5 Dimensions of Writing. *Journal of Education Research and Evaluation*, 5(2), 243. <https://doi.org/10.23887/jere.v5i2.31597>
- 33) Wuryantari Winasih, W., Cahyono, B., & Ananto Prayogo, J. (2019). Effect of Project-Based Learning Using E-Poster on Indonesian EFL Students' Speaking Ability across Personality Types. *SSRN Electronic Journal*, 10(1), 73–83. <https://doi.org/10.2139/ssrn.3367522>
- 34) Zahro, B. L., & Mitarlis, M. (2021). Student Worksheet Oriented on Project Based Learning To Train Student Creative Thinking Skills on Acid-Base Material. *UNESA Journal of Chemical Education*, 10(1), 1–9. <https://doi.org/10.26740/ujced.v10n1.p1-9>
- 35) Zhang, X. S., & Zhang, L. J. (2022). Sustaining Learners' Writing Development: Effects of Using Self-Assessment on Their Foreign Language Writing Performance and Rating Accuracy. *Sustainability*, 14(22), 14686. <https://doi.org/10.3390/su142214686>



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Solution Attracting Customers to Participate in Life Insurance in the Vietnam Market



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ABSTRACT: Vietnam is a potential market for life insurance, but so far, the growth rate of life insurance has not been commensurate with a densely populated market like Vietnam. The purpose of the article is to give an overview and preliminary view of the development of life insurance in Vietnam. There are still limitations in the business activities of these enterprises. The ability to expand market share and necessary solutions for life insurance businesses in Vietnam.

KEYWORDS: Business, Life insurance, Potential, Vietnam

1. INTRODUCTION

Life insurance plays an important role in providing capital to the economy and providing financial security for participants and their families when faced with risks. In developed countries, the rate of people participating in insurance as well as life insurance reaches over 90%, greatly contributing to ensuring social security. Vietnam is a country that develops its life insurance network quite late compared to other countries in the world. According to the Insurance Association of Vietnam [IAV], the number of people participating in buying life insurance products is less than 15% (IAV, 2022), much lower than the potential. The growth rate of life insurance businesses has increased rapidly in recent years with an average of 20% (IAV, 2018-2022) but there are many problems due to hot growth. The number of contracts canceled in the first three years accounts for a high rate, about 20% in 2022 (IAV, 2022), this number has decreased a lot compared to 46% in 2018 (IAV, 2018) but still very worrying. The reason why life insurance businesses operate in the new market, the majority of people who have not participated in any type of life insurance are still struggling to find customers and retain customers. This article aims to understand the current situation of the life insurance market in Vietnam. Life insurance businesses have the ability to find potential customers or not. What difficulties should be considered and solutions for businesses to solve these problems?

2. VIETNAM LIFE INSURANCE MARKET

Combining the two factors of a young population and the strong development of Vietnam's economy, insurance is really a useful tool to help people achieve financial security. Therefore, life insurance businesses need to come up with new and more creative solutions so that the benefits of life insurance are spread to everyone. Currently, there are 19 personal insurance companies operating in the Vietnamese market (AIV, 2022). In 2022, the total assets in the insurance industry are estimated at 849.4 trillion VND, and the whole industry has invested back into the economy at 708.4 trillion VND, up 14.4% over the same period (IAV, 2022). This shows that Vietnam's insurance market is not only a useful financial protection tool for investors but supporting almost all economic sectors: from property insurance to aviation insurance to insurance. Credit insurance, health insurance ... but also considered as one of the medium and long-term capital channels for the economy. From the side of experts and insurers, continuing to develop and promptly complete supporting mechanisms and policies, and gradually improving the publicity and transparency will contribute to promoting the healthy and safe development of the market complete and effective. Groups of solutions to improve the business environment and enhance competitiveness implemented by the Ministry of Finance in recent years have brought positive results to the Vietnamese insurance market. For insurance companies, improving operational efficiency and accelerating growth is important, but it must go hand in hand with quality. Expanding scale, expanding market share, and expanding portfolio must be accompanied by improving the quality of insurance products and services and ensuring the ethics of insurance employees. The negative information about insurance businesses in the media still mainly focuses on pressing issues and denunciations from customers related to insurance contracts, compensation, and insurance payments. Therefore, in order to ensure the quality of growth, enterprises need to simultaneously strengthen the training of employees with

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solid insurance skills and develop a process to resolve conflicts and disputes reasonably, ensuring good interests, and the best for customers.

2.1. Life insurance market share in Vietnam

In 2022, the largest market share of the group of 5 enterprises is Bao Viet Life at 18.8%, Prudential at 17.7%, Manulife at 17%, Dai-ichi Life at 12.7% and finally AIA at 10.3% (IAV, 2022). The total number of life insurance policies as of the end of 2022 is 13.9 million policies (IAV, 2022). However, in the first 6 months of 2023, the mining market share fluctuated sharply.

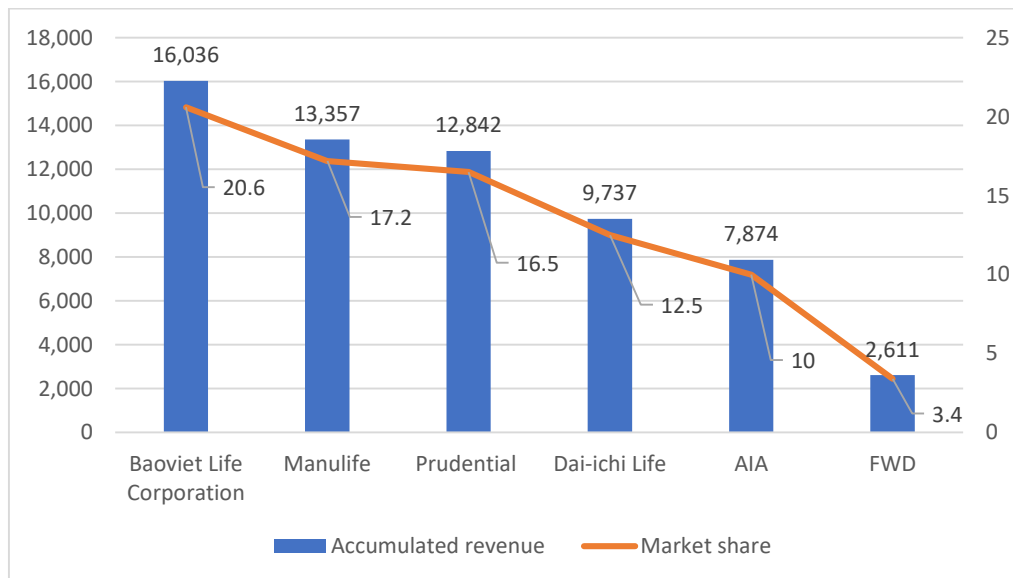


Figure 1. Accumulated premium revenue in the first 6 months of 2023

Unit: billion

Source: IAV, 6.2023

Life insurance business Manulife faced a strong crisis because of its banking distribution channel, new sales fell two places to the third position. Specifically, in the first 6 months of the year, British insurance group Prudential led the way. First in terms of new insurance premium revenue with VND 2,740 billion, Dai-ichi Life of Japan with VND 2,046 billion, Manulife of Canada with VND 1,976 billion, Bao Viet Life with VND 1,912 billion and finally Sun Life of Canada ranked in the top 5 with revenue of 1,183 billion VND. However, in terms of accumulated premium revenue, Baoviet Life Corporation is still leading with 20.6%. Firms not shown in Figure 1 have a market share of 3% or less and account for a total of 19.8%.

2.2. Number of life insurance policies

As we have mentioned, the number of life insurance policies canceled in three years is always high. However, the growth rate of new mining contracts has always been higher than the number of cancellations, so since 2014 we have only seen an increase in the number of contracts over the years. This number changed in the first 6 months of 2023, new mining contracts fell sharply and did not catch up with the rate of policy cancellations. This is the first time the number of life insurance policies in the whole market has decreased. Life insurance premium revenue of the whole market in 6 months was estimated at VND 77,830 billion, down nearly 8% compared to the same period last year. New mining revenue is estimated at VND 15,500 billion, down sharply by 38%. The whole market has 13.35 million life insurance policies (main product) in effect, down about 550,000 policies compared to the beginning of this year (IAV, 6,2023). This information is a wake-up call for insurers in business, distribution and customer retention. The reason for this decline may be due to the impact of the incident of not providing the correct contract terms to customers at the end of 2022. Customer confidence collapsed, causing a "butterfly" effect that caused the number of customers to fall. New sales contracts in the whole market in the first half of the year fell sharply by 31% y/y to 1,028 million contracts (IAV,6.2233). In addition, there are about 1.5 million contracts canceled or invalidated by customers in 6 months. This number includes customers who actively cancel, stop paying fees before the deadline, and even contracts that have expired. A bancassurance distribution channel is the channel with the most decline. Traditional distribution channels are also affected, but less so than through banks.

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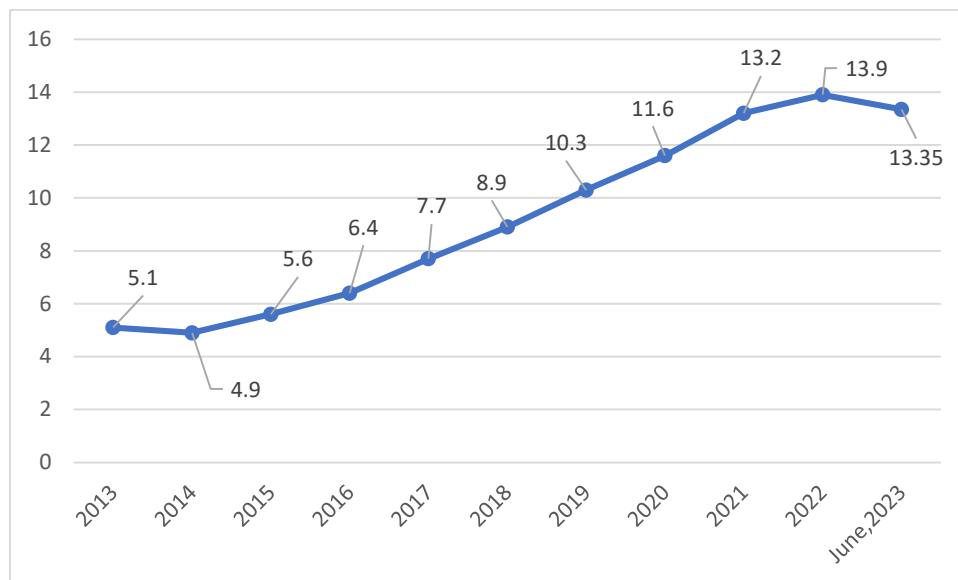


Figure 2. Contracts across Vietnam's life insurance market

Unit: Million contracts

Source: IAV, Insurance Yearbook

3. METHODS

Through secondary data collected by document research method, the authors have presented the situation of the life insurance market in Vietnam. The data is aggregated and put into each item to serve as a basis for analysis and assessment of the business performance of enterprises. Evaluation of the market share and the possibility of expanding the life insurance market in Vietnam. By analytical method, we also make judgments about difficulties and find suitable solutions to help life insurers in expanding the market.

4. RESULTS

4.1. Difficulties of the current life insurance market

Through the incident of causing loss of trust from customers from the Bancassurance distribution channel, we see more and more weaknesses in business activities that still exist. Brokers compete with each other, work unprofessionally, randomly add terms and conditions and reduce premiums. All of this negatively impacts insurance companies and the insurance market. Accept reduced commission to gain market share. Sales pressure can cause employees to use various methods to damage the company's image, which can affect the management company and its customers. The insurance market is lacking in highly qualified personnel. In addition, the skills shortage related to digital transformation is also posing a dilemma for today's insurers or leaving their employees on short notice. This poses many risks for the company and the market. The information technology infrastructure of insurance enterprises is not synchronized. Insurtech is still in the early stages of development and is not yet effective compared to traditional sales channels. Information between businesses and customers is asymmetric. Thus, in order to revive the upward momentum, insurance businesses need to solve many difficulties.

4.2. Possibility to expand the life insurance market

Since the opening of the market, Vietnam's economy has undergone drastic changes. In addition, our insurance market in general and in the personal insurance sector, in particular, continues to expand. The wide participation of all sectors of the economy in the insurance service business. Companies use a wide variety of life insurance products to serve their customers, partly to meet the diverse and diverse needs of policyholders and create competitive choices for customers. The financial performance of insurance companies has been significantly enhanced by equity and operational reserves, which greatly increase the solvency and holdings of each company. It generates substantial capital investment and reinvestment in the economy. Investment activities of insurance companies are becoming more and more important. This is really an important capital mobilization channel for socio-economic development. Investment capital structure has changed significantly from short-term investment to long-term investment. However, as the number of licensed insurers increases, the already competitive insurance environment becomes more and more challenging, especially with a greater impact on human capital. Insurance companies must actively develop appropriate business strategies, expand distribution networks and, more importantly, improve the quality of insurance products to stimulate people's insurance demand. Quality inspection and payment services. Today, insurance is no longer a strange concept

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to society. People are becoming fully aware of the role and importance of insurance in their communities and personal lives. With this interaction, the insurance market share may not shrink as before.

4.3. Some solutions to reach customers

Digitization Application

The insurance industry is noted to be a highly concentrated industry, with the top 5 life insurers accounting for 80% of the market share. Competitive pressure is increasing among insurers in order to gain market share and compete for the leading position. With the onset of Industry 4.0, insurance companies have realized that they need to use digital technology as a springboard for growth. 82.4% of insurers said that they are in the process of building a strategy to develop sales channels via the Internet, of which 64.7% have built a strategy based on two main factors of the Industrial Revolution 4.0. is the Internet of things [IoT] and Big Data. Currently, many non-life insurance companies such as Baoviet Life Corporation, Manulife, Prudential, and Dai-ichi Life have implemented claims management using digital technology. Life insurance companies such as Prudential and Aviva have also received very good support from the Parent Company, a global company that uses chatbots invested in artificial intelligence technology to support business operations.

Product innovation

Developing new products is also one of the focus orientations of insurance enterprises in the coming period. In the context of an increasingly developed society, people become more concerned about health issues and protecting their own interests, researching new products, and serving the right needs and the right customers is important. extremely urgent. In Vietnam Report's survey of insurance users, the majority agreed that the company's continuous research and development of new products for different customers is a decisive factor in the reputation of the insurance company on the media. From 2017 to now, many new products have been launched, especially health-related products, which are focused on exploiting both life and non-life insurance sectors.

Competition expands the network

One of the solutions that insurers are currently promoting is to increase market coverage and constantly expand their network. Not only developing the network through the establishment of branches and offices; businesses are also quick to promote new distribution channels such as online sales, and social networks and expand product cross-selling cooperation with partners such as associations, fintech companies, healthcare service companies, etc. health care. Partnership with fintech companies (organizations that apply technology to all financial activities to provide customers with technology-based financial products) is also a new element of the market. insurance. Many insurance businesses responded that they planned to expand cooperation with fintech companies, with the intention of linking the development of distribution channels, and cooperation in insurance services on the internet and in the field of payment.

To make the benefits of life insurance more known

In fast-developing countries like Vietnam, people's awareness of insurance and life insurance is still inadequate. Many customers do not understand the difference between different types of insurance products and the specific benefits of each product group. Solutions for the new generation we should be implementing include simplifying insurance publications and illustrations, using language that is easy to understand. Along with this, we will use technology to make the buying process simpler, faster and more transparent. With collaborative and creative thinking to simplify the life insurance buying process and shorten the gap between life insurance and Vietnamese people, life insurance companies are ready to innovate to spread the word, about the benefits of life insurance.

Bringing life insurance closer to young people

The majority of people participating in life insurance in Vietnam are in the age group of 30-45 years. Young workers have not paid much attention to their health and are not familiar with the concept of life insurance. But we can change this through integrating technology, digitizing processes, and using social media to reach customers. Young people were born in the digital era, so to attract this tech-savvy generation, the best way is to invest in digital channels. Another way to attract young people to life insurance is to create attractive career opportunities. Companies should communicate together so that young people understand that coming to life insurance, they will be able to work with a flexible schedule, have the opportunity to achieve high income even at a young age, and can continuously develop their network of relationships.

Working together

We often hear about competition in the life insurance industry - companies seem to be watching, wary of each other. Although competition is real, life insurance companies all share one thing: Life insurance is meant to help people. Therefore, to spread the spirit of help and benefits of life insurance, companies should cooperate and create synergy. The Vietnam Insurance Association

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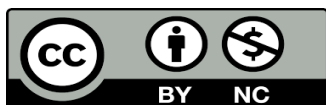
understands this and is promoting cooperation between companies by creating a network and space where insurers can meet and exchange experiences.

5. CONCLUSION

The article with some of the above solutions hopes to help life insurance businesses have a new approach to customers. Find a way for life insurance products to reach everyone. This is not only meaningful in terms of revenue and profit for insurers, but also a goal to help Vietnam's social security become more stable and sustainable.

REFERENCES

- 1) Insurance Association of Vietnam (2018). *Insurance fact book 2018*, Insurance Association of Vietnam, Hanoi, Vietnam
- 2) Insurance Association of Vietnam (2019). *Insurance fact book 2019*, Insurance Association of Vietnam, Hanoi, Vietnam
- 3) Insurance Association of Vietnam (2020). *Insurance fact book 2020*, Insurance Association of Vietnam, Hanoi, Vietnam
- 4) Insurance Association of Vietnam (2021), *Insurance fact book 2021*, Insurance Association of Vietnam, Hanoi, Vietnam
- 5) Insurance Association of Vietnam (2022), *Insurance fact book 2022*, Insurance Association of Vietnam, Hanoi, Vietnam
- 6) Insurance Association of Vietnam (2023), *Insurance fact book 6-month 2023*, Insurance Association of Vietnam, Hanoi, Vietnam



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Maleo Conservation Development by Local Communities: A Case Study of PT Pertamina Patra Niaga Fuel Terminal Poso's CSR Program in Sumara Jaya Village



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ABSTRACT: Maleo is one of the most interesting and unique endemic birds in Sulawesi Tengah, Indonesia. This bird is known for its exciting and unique breeding behavior. Maleo belongs to the family Megapodiidae. According to the Regulations of the Minister (PERMEN) of the Environment and Forestry of the Republic of Indonesia (KLHK), no. P.20/MENLHK/SETJEN/KUM.I/6/2018 regarding the protected species of plants and animals, the maleo bird is designated as a protected animal. The research was carried out at a Maleo bird conservation site located in Sumara Jaya village in Morowali Utara district, Province of Sulawesi Utara, Indonesia. Conservation of maleo birds is not other than one of the CSR programs of PT Pertamina Patra Niaga Fuel Terminal Poso in cooperation with BKSDA Sulawesi Tengah through the Seksi Konservasi Wilayah II Poso. The aim of this research is to find out the shape and level of participation of the local community in the conservation program of Maleo in the village of Sumara Jaya. The results of this study show that there are three people from the local community in the village of Sumara Jaya who are actively engaged as robbers in the Pertamina Bersama Maleo program. They play a role in monitoring the nest and protecting the habitat.

KEYWORDS: empowerment of the village community, maleo, conservation, pertamina, sumara jaya village.

INTRODUCTION

The Indonesian Island of Sulawesi is biogeographically fascinating and its fauna is highly distinctive: 98 per cent of non-volant mammals are endemic to the island, as are 27 per cent of bird species, including an exceptional total of 12 endemic genera (Whitten et al., 1987; Coates et al., 1997). This bird is known for its very interesting and unique breeding behavior. Maleo belongs to the family Megapodiidae and is characterized by female mothers that lay their eggs in hot volcanic soil, which is then incubated by natural earth heat.

Maleos incubate their eggs in communal nesting areas warmed by solar or geothermal heat. Adult birds dig holes up to 1 m deep, where the female deposits a solitary egg. The adults provide no more parental care after the egg has been buried. Maleos forage in montane forest, often several kilometres away from the nesting grounds (Jones et al., 1995).

Medium-sized Maleo birds with striking feathers, like old brown and orange. Maleo male and female have a difference in size. Maleo male is larger than females. The main habitat of the maleo is in the primary and secondary forests in the lowland and mountainous areas of Sulawesi Tengah. Maleo birds are not uncommon to be found in coastal areas near sandy areas.

One of the interesting aspects of Maleo birds is the way they breed. Maleo Betina will be looking for volcanic soil that is hot enough to lay her eggs, which weigh almost a third of her body weight. After the egg is laid, the soil will store enough natural earth heat to lay the eggs. After hatching, Maleo's little birds have to find their own food and learn to live independently. Unfortunately, the population of Maleo birds has experienced a drastic decline as a result of hunting and the loss of their natural habitat due to the proliferation of forests.

The maleo is threatened by loss of habitat, egg predation and hunting (Dekker, 1990; Argeloo, 1994; Dekker & McGowan, 1995) and is listed as vulnerable to extinction (Collar et al., 1994; Dekker et al., in press). It is consistent with what Christy and Lentey (2002) revealed that the population of the Maleo is estimated to decrease every year due to habitat damage caused by the opening of farmland by the community and disruption of natural predators, hunting, and egg harvesting by humans. This constitutes the greatest threat to the sustainability of the Maleo. Therefore, the conservation of Maleo birds has become crucial to ensuring their survival in the wild. Various conservation efforts have been undertaken by governments and non-governmental organizations, including public awareness campaigns and protection of their natural habitats. In addition, regulations have been issued to protect

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Maleo birds from human threats, such as the regulations of the Ministry of Environment and Forestry of the Republic of Indonesia (KLHK) no. P.20/MENLHK/SETJEN/KUM.I/6/2018 about protected plants and animals.

In recent years, attention to the conservation of maleo birds has increased, and efforts to protect and restore their populations have continued. This research wants to see how maleo conservation is developed by inviting local communities to participate in it.

METHODS

The research was carried out at a maleo bird conservation site located in Sumara Jaya village in Morowali Utara district, Sulawesi Tengah Province, Indonesia. The conservation of maleo birds is not other than one of the CSR programs PT Pertamina Patra Niaga Fuel Terminal Poso, working with BKSDA (Balai Konservasi Sumber Daya Alam) Sulawesi Tengah through the Seksi Konservasi Wilayah II Poso. The aim of this research is to find out how the shape and level of participation of the local community in the conservation program of Maleo in the village of Sumara Jaya.

The method of data collection is done with direct observations and interviews. The observation method is done to dig information about the state of the research area. The observation was made by recognising some attempts to invite local communities to participate in the Maleo conservation program.

The interview is conducted in an effort to strengthen the field observation that has been carried out. The information obtained in the field can be validated based on the statements of several sources. Several sources who provide statements related to Maleo conservation consist of community figures and Seksi Konservasi Wilayah II Poso.

DISCUSSION

Maleo Bird Species

From the research results, it was found that there is one type of Maleo bird present in Sumara Jaya village:

Table 1 Maleo Bird Species in Sumara Jaya Village

No	Indonesian Name	Scientific Name	IUCN Status
1	Maleo Senkawor	<i>Macrocephalon maleo</i>	Critically Endangered (CR)

Table 1 indicates that the type of Maleo bird found in Sumara Jaya village is the Senkawor Maleo, with the scientific name *Macrocephalon maleo*. *Macrocephalon maleo* has a remarkable appearance, including a huge body size of roughly 55–60 cm. It has a reddish-brown coat on top and a lighter brown coat on the underside. This bird's crown is distinguished by contrasting pale plumage. Maleo's beak has a characteristic shape that is large and robust, making it appropriate for its primary diet.

The maleo's breeding behavior, on the other hand, is what makes it so intriguing. The Maleo is a bird species that uses an unusual nest-hatching process. They hide their eggs in hot sand or warm volcanic soil, such as beneath hot sand resulting from volcanic activity. The natural heat from this environment serves as a substitute for the mother bird's incubation, and the eggs hatch after a few weeks.



Picture 1 transferring Maleo eggs from the nesing ground to the hatchery

Maleo Conservation Development by Local Communities: A Case Study of PT Pertamina Patra Niaga Fuel Terminal Poso's CSR Program in Sumara Jaya Village

In the Pertamina Bersama Maleo program, all Maleo eggs are obtained from the nesting ground area located in Sumara Jaya village. These eggs are then transferred to the hatchery. This is done to ensure the Maleo eggs are safe from both natural predators and from wild hunting conducted by humans. The hatchery originally amounted to one that was built by Seksi Konservasi Wilayah II Poso. However, with the involvement of PT Pertamina Patra Niaga Fuel Terminal Poso through their CSR program, namely the Pertamina Bersama Maleo program, the number of incubation enclosures has increased to two. Not only that, through this program PT Pertamina Patra Niaga Fuel Terminal Poso with the Seksi Konservasi Wilayah II Poso also built a rearing enclosure at the same location. This is aimed at nurturing and monitoring the development of Maleo birds before releasing them into the wild. The monitoring process is carried out by local community members who have been appointed by the Seksi Konservasi Wilayah II Poso to become Maleo breeders. The monitoring of Maleo birds takes place for a duration of 4 weeks.

Local Community Participation

In general, the residents of Sumara Jaya village have been living alongside Maleo birds for a long time. Over the years, the people of Sumara Jaya village have developed a close relationship with both the habitat and the Maleo birds. This has occurred because the community settlement is located within the Maleo conservation area, which spans an area of 14.1 hectares.



Picture 2 the breeding community takes a photo together with the Pertamina team at the nesting ground area

Despite some individuals in the community still engaging in illegal hunting of Maleo bird eggs, there are three local community figures in Sumara Jaya village who are actively involved as breeders in the Pertamina Bersama Maleo program. Initially, they were appointed by the Seksi Konservasi Wilayah II Poso to become Maleo breeders due to their care and experience in tracking Maleo birds. This concern arose not only because the Maleo population in their village was decreasing but also due to the annual campaigns conducted by the Seksi Konservasi Wilayah II Poso in the Sumara Jaya village community.

Now, with their active participation in the Pertamina Bersama Maleo program (since 2022), these three breeders are involved in nest monitoring, habitat protection, and searching for Maleo bird eggs. Despite facing challenges such as high rainfall leading to the unsuccessful hatching of some Maleo eggs, the presence of these breeders, who are also community figures in Sumara Jaya village, has had a positive impact on Maleo bird conservation efforts. They are at the forefront, not only advocating for Maleo protection but also contributing significantly to the conservation process.

CONCLUSIONS

Research on the development of maleo conservation based on the local community in the village of Sumara Jaya produced some of the following conclusions:

- **Maleo Species:** There is one species of maleo that is found in the village of Sumara Jaya, Maleo Senkawor, with the scientific name *macrocephalon maleo*.
- **Local Community Role in Conservation:** There are three (3) local community figures in the village of Sumara Jaya who are actively involved as breeders in the Pertamina Bersama Maleo Program. They play a role in nest monitoring, habitat protection, and maleo bird egg searches.
- **Nesting Ground:** Human activities such as deforestation, illegal mining, and wild hunting seriously threaten the habitat and population of maleo birds. However, in the village of Sumara Jaya by the Seksi Konservasi Wilayah II Poso, the nesting ground has been established so that maleo activity and human activity do not interfere with each other.

Maleo Conservation Development by Local Communities: A Case Study of PT Pertamina Patra Niaga Fuel Terminal Poso's CSR Program in Sumara Jaya Village

In conclusion, the development of local community-based maleo conservation in the village of Sumara Jaya is a positive approach to the conservation of maleo birds and their habitats. The active involvement of the local community and cooperation between the various parties are the keys to success in the conservation efforts of this species.

RESEARCH ADVICE

The researchers hope that further research on maleo behavior, ecology, and genetics will be needed to support deeper conservation efforts. In addition, research is needed to evaluate the impact of human activities in the village of Sumara Jaya on the Maleo Habitat. This can include an analysis of activities such as forest extraction, illegal mining, and hunting for maleo eggs in the village of Sumara Jaya.

REFERENCES

- 1) Coates, B.J., Bishop, K.D. & Gardner, D. (1997) A Guide to the Birds of Wallacea: Sulawesi, The Moluccas and Lesser Sunda islands, Indonesia. Dove Publications, Alderly, Australia.
- 2) Christy, M.J., dan Lentey. S.M, 2002. Proyek Maleo – Tahap 3 Sulawesi Utara, Indonesia, Taman Nasional Bogani Nani Wartabone, Laporan Tahun, Agustus 2001 – Juli 2002. Departemen Kehutanan (PKA) *Wildlife Conservation Society* – Indoneisa Program. Manado.
- 3) Dekker, R.W.R.J. (1990) The distribution and status of nesting grounds of the maleo *Macrocephalon maleo* int Sulawesi, Indonesia. *Biological Conservation*, 51, 139-150.
- 4) iucnredlist.org. 2021. Maleo – *Macrocephalon Maleo*. <https://www.iucnredlist.org/species/22678576/194673255>. Diakses pada 19 Agustus 2023
- 5) Jones, D.N., Dekker, R.W.R.J & Roselaar, C.S. (1995) The Megapodes: An Action Plan for their Conservation 2000-2004. IUCN, Gland, Witzerland
- 6) Pemerintah Indonesia. 2018. Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.20/MENLHK/SETJEN/KUM.I/6/2018 Tentang Jenis Tumbuhan dan Satwa yang Dilindungi
- 7) Whitten, A.J., Mustafa, M. & Henderson, G.S. (1987) *The Ecology of Sulawesi*. Gajah Mada University Press, Yogyakarta, Indonesia.



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School Administration Related Factors that Influence Access to and use of ICT in Special Schools of Learners with Visual Impairment



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ABSTRACT: The infusion of Information communication technology into teaching and learning in schools is growing by day. Information Communication Technology is now a reliable source of knowledge for transforming and reforming education. However, the school administrators' personal beliefs and theories about integration of ICT in teaching and learning are widely considered to play a central role in the implementation of the new technologies in schools. Therefore, given the role the head teachers play, there is need to investigate their influence in the access to and use of ICT in special schools of learners with visual impairments. The findings are significant for it would help policy makers to understand the role of school administration in the implementation of ICT in special schools with learners with visual impairments. The objective of the study was to establish school administration factors that influence access to and use of ICT in special schools for learners with visual impairments in Kenya. The study adopted descriptive survey design. The study targeted seven public special primary schools for learners with visual impairments with a population of 1667, 161 teachers, seven head teachers, seven computer teachers and seven ministry of education officers. The study sampled three schools situated in different counties in the country; Kiambu county, Meru county and Mombasa county. Judgmental sampling technique, stratified random sampling and simple random sampling were used to draw the samples. The samples consisted of three primary schools for learners with visual impairment, 168 learners, 18 class teachers, 3 computer teachers, three head teachers and three Ministry of Education officials in the counties where the schools are situated. Data collection instruments were questionnaires, interview schedules and observation schedules. Content validity was determined by seeking expert review. The Cronbach Alpha formula was used to compute the reliability of the instruments. A reliability coefficient of 0.72 was used to judge the reliability of the instruments. The data collected was analyzed using descriptive statistics. The study found that head teachers are willing to support the learners with visual impairment to access and use ICT in the schools. However, there are hindering factors such as unstable internet connection, low teachers' capacity to use ICT, lack of enough time allocated to ICT learning, some of the head teachers had little knowledge on how to get adapted ICTs for learners with visual impairment and finally, there was no mechanism or model for accessibility of the ICT and other assistive resources for learners with visual impairments in the schools. The study recommended that the government through the ministry of education to train head teachers and teachers on the use of ICT suitable for learners with visual impairments in schools and ensure their functionality and availability. There is also need for a model for access of ICT and provision of the learning support for the learners with visual impairments in the special primary schools in Kenya.

KEYWORDS: School administrators; access and use of ICT; special schools; school managers' personal beliefs in ICT.

I. INTRODUCTION

Series of studies have shown that a positive attitude, personal beliefs and supportive school head teachers significantly affect the extent in which schools implement information communication technology (Nangunda 2018; Biwot, 2012, Afshari, 2008; Mrazek, Hollingsworth and Street, 2005). Empirical evidence in several literature reviewed have highlighted head teachers leadership styles, lack of proper planning at the school level, ICT knowledge by head teachers, ICT practice models, lack of institutional administrative and technical support, were cited as obstacles to ICT adoption in schools. (Akbar et al. 2022; Papainoanou and Charalambous, 2011; Afshari, 2008; Mutisya et al 2017). This study was guided by the above dimensions to determine the influence of School administrators in the implementation of ICT in schools for learners with visual impairment.

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Lack or scarcity of ICT in schools is not a standalone barrier to the use of the same in the educating of learners with visual impairments. A bigger problem comes when there's little support from the school administration. For the school administrator to apply new technology, knowledge development is necessary. They will need to update and improve their technological abilities in order to use new technology. Computer use in education and training is growing in popularity. Institutions of learning cannot function without computers. The majority of administrators however, find it difficult to start a computerization project at school because ICT is a relatively new sector and very expensive (Chin et al; 2022). Many school administrators feel overburdened by the mandate to incorporate ICT in classrooms and the enormous responsibility of managing schools in a world that has been altered by technologies. School administrators are expected to take on leadership roles for which they have very little experience and are unfamiliar. For them to be effective in their new roles as technology leaders in controlling the use of ICT in schools, they must acquire new competencies. The head teachers' personal beliefs and theories about integrating of new technologies in teaching and learning are widely considered to play a central role in the implementation of ICT in schools. The head teachers' styles and beliefs in schools can facilitate or inhibit curricular implementation (Papainoanou and Charalambous 2011). Findings by Mrazek, Hollingsworth and Street (2005) stated that school leaders with positive attitude towards ICT integration can facilitate integration largely. Afshari (2008), construed that, for a successful integration of ICT in teaching and learning, there has to be proper planning at school level. The school is expected to provide necessary ICT resources for the teacher and learners to use. An ICT integration plan provides a detailed blue print of the steps and methods needed to translate the school ICT vision reality. A plan is a guide to action not substitute for it, argued Bryderup and Kowalski (2002). They further stated that the existence of a written ICT plan and strategy does not guarantee the comprehensive use of ICT in schools, nor the absence of an ICT plan necessity equate the lack of ICT integration in a given school, but it is the work of the head teachers to make sure there is a comprehensive structure to enable effective use of ICT in the schools.

The leadership of the principals is crucial to the adoption of ICT in schools. According to a study by Incluer et al (2010), the usage of ICT was dependent on the principal's cooperation in setting up in-service training sessions and maintaining the school website for use. In order to ensure integration, principals must use their creativity while obtaining resources. This creates a climate that is conducive for teamwork. Lack of ICT practice models as well as a lack of institutional administrative and technical support, were cited by Akbar et al (2002) as obstacles to ICT adoption in schools. In the opinion of Binder and Nederle (2007) in Biwot (2012), the head teachers are implementation leaders, the principal functions are to coordinate and organize organizational parts that must operate in harmony in order to achieve implementation of goals. Binder and Nederle (2007) argue that locating and organizing of necessary human material, technical and financial resources; establishing and facilitating organizational structures; creating and operating an effective communication network and developing a viable decision making procedures are the core functions of the head teachers. In other words, they are instrumental in enabling and facilitating the capacity of other implementers. Apart from sourcing and procuring ICT for the school, the headteacher should provide the technical support staff. Lewis (2003) asserted that without both good technical supports in the classroom and whole school resources teachers could not be expected to overcome the barriers preventing them from using ICT. Korte and Housing (2007) and Pelgrum (2001) argued that ICT support and maintenance contracts in schools help teachers to use ICT in teaching without losing time through having to fix software and hardware problems.

II. STATEMENT OF THE PROBLEM)

Current trends in primary schools of learners with visual impairment in Kenya show that there is minimum utilization of ICT resources in pedagogy. Kenya has made considerable effort to ensure quality education for all learners including those with visual challenges. The government has given support and put emphasis in the use of ICT in all schools at all levels including the special schools and colleges. Moreover, legislation such as the Kenyan constitution (2010), Persons with Disabilities Act (2003) and the special Needs Education Policy (2009) has resolved a number of important issues affecting the quality of education of learners with visual impairments. However, research has shown that these learners still lag behind their sighted peers in education, this has generated numerous questions with respect to what could be done to help the learners compete equally with their peers. Special schools with learners with visual impairment in Kenya have legal obligation to provide learning support and substantive accommodations for the learners that afford them quality education and equal opportunities in their future lives. However, the current practice of providing this essential support to the learners in special primary schools lacks sufficient research. Therefore, this has provided an opportunity for this research to investigate the school administration related factors that influence access to and use of ICT in special schools for the learners with visual impairments in Kenya.

Objective of the study

This study was undertaken to establish the school administration related factors that influence access to and use of ICT in special schools for learners with visual impairment in Kenya.

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III. METHODOLOGY

The study aimed to establish if there exist relationship between school administrators' leadership styles with access and use of ICT in special schools for learners with visual impairments. Descriptive survey design was adopted in the study. This design was suitable because the study was about description of an existing situation. The study was carried out in three special primary schools for learners with visual impairment. Thika primary for the blind, in Kiambu county; St. Lucy primary for visual impairment in Meru county and Likoni primary for the visual impairment in Mombasa county. The target population of the study comprised 1667 learners; 161 teachers; 7 computer teachers; 7 head teachers and 7 ministry of education officers. The sample size comprised of 168 learners, 18 teachers: 3 computer teachers; 3 head teachers and 3 ministry of education officials. Purposive sampling was used to select the schools, head teachers, teachers and ministry of education officials. Stratified random sampling method then simple random sampling was used to sample the learners. Questionnaires with 5 scales; interview schedules and observation schedules were utilized for data collection in the study. The quantitative were coded and related information grouped together to predetermine themes. The data was then entered into the computer and analysed using (SPSS). Qualitative data was presented in a narrative form where the voice of the interviewees were captured in the analysis.

IV. ANALYSIS AND DISCUSSION

The objective of this research was to establish the school administration related factors that influence access and use of ICT in special schools for learners with visual impairment. In order to achieve this objective, the respondents' opinions were sought on: time allocated for training learners with visual impairment; access to ICT in the schools; in service for ICT training by the teachers; importance of ICT to learners with visual impairment and how schools obtain ICT resources.

They access ICT outside the school.	3	0	0
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The objective of this study was to determine the factors that enabled or deterred access of ICT for pedagogy of the learners with visual impairment according to the school head teachers of the sampled schools. They were interviewed on various issues that included the time the school gave for the training of the teachers and the learners on ICT, the technical support the school gave to both the teachers and the learners in the access of the ICT and about the school ICT support infrastructure among other factors.

A. ICT infrastructure in the schools

The researcher requested to be allowed to access the ICT infrastructure. It was found out that all the sampled schools had electricity, and each school had a computer laboratory with desktop computers. There was also internet connection but quite often, the internet was unstable. On asking why the internet was unstable, the school head teachers complained that it was even expensive for the schools to maintain it since the fee was high. It was also found out that each school had an ICT technician who was often in the laboratory. The technician work was to repair computers and maintain them. Additionally, he was to train any willing staff on how to use the adapted computers. On asking why the lab technicians did not train the learners, they mentioned that they only supported them to learn any new skill since the schools had teachers for training the learners on how to use the computers based on the curriculum.

This being the case, the researcher was further interested to find out how ICT was being accessed by both the teachers and the learners. The findings are as presented in Table 1.

Table 1: ICT Access by the Learners with VI

	N	Frequency	Percentage
They access ICT resources at school	3	3	100

From the Table above the head teachers confirmed that learners with VI accessed ICT at school. This made the researcher to be interested to know why the head teachers said that ICT could not be accessed at home. A common sentiment from the three head

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teachers was that it is clear that most learners with VI come from poor background and as a result cannot access ICTs at home. ICT for the blind is extremely expensive and most of it is not found locally. Even some parents whomight afford might not have knowledge of where to get the technology. The NGOs and the Government provide the ICT resources.

The above findings are supported by Kimuyu (2016) that the majority of schools did not have Internet access, hence email was not used for management or other forms of communication. The findings are also in agreement with Kahn(2007) who found that 80% of all people with disabilities in the developing world live in what can be considered poor living conditions and therefore among the worlds' poor and thus cannot afford to buy or even access the new technologies. Most learners learnt computers at school and were appreciative of it. The findings agree with the research carried out by Coudie, (2007) which indicated that the extent to which schools are in a position to implement and take advantage of ICT in learning and teaching depends on development across a number of dimensions relating to infrastructure including school policy, resources, teacher confidence and capacity, connectivity, security, and management of the system. Each of these to a greater or lesser extent, has an influence on the way in which ICT becomes part of the learning and teaching process and has an impact upon the experience of learners, teachers and schools.

Moreover, it is imperative that the learners access ICT including computers at home for the purpose of academic and social connection. Waddell (2000), found out that increased ICT confidence amongst students motivates them to use the internet at home for schoolwork and leisure interests among these being keeping in touch between themselves and even their teachers. Also, MoE (2006) observed that ICT can play a role in preparing students' competencies and socio skills that are fundamental for competing in the emerging global 'knowledge economy.'

B. Time allocated to ICT training in school

The school head teachers were questioned about the time they allocated for the training of ICT use. The respondent unanimously asserted that learning how to use ICT including computers takes a deserved short period. One of them Johnstone (pseudonym) stated that,

"It is a matter of interest. The school does not even require offering separate time for training on computers especially to the teachers. Those who know what they are doing can learn during their free time for instance during weekend and during holidays. But due to some of the teachers' negative attitudes they always demand for time to be trained, surprisingly when we give them time they don't train'.

This statement showed that the head teachers were not very willing to give time for training both the learners and the teachers. One head teacher even thought that learning special computer applications was so easy. The researcher got interested to get more information from the head teacher and asked him whether he would be willing to be part of the team of trainers of computers for the blind. He responded that he would be willing if he were first well trained on the various technologies for the blind. Time is a very important resource, especially in the field of technology use in schools. A study by this finding is in agreement with Al-Alwani (2005) that time is an important factor affecting the application of new technologies in education. Lack of time is a barrier affecting the application of ICT in education. Schoepp, (2005) further identified time limitations and the difficulty in scheduling enough computer time for classes as a barrier to teachers' use of ICT in their teaching. According to Sicilia (2005), the most common challenge reported by teachers was a lack of time to plan technology lessons, explore different internet sites or look at various aspects of educational software. Mugo, (2013) observes that most of the technologies used by learners who are blind were not initially designed with the mind of these learners. Due to this, the teachers who might also not have a clue of how these technologies are made should have ample time to learn, explore and figure out how the technology can best be used to teach the learners.

Learning ICT especially for learners with special needs requires ample time. Waycott, Bennet, Palgamo, and Kennedy, (2010), conducted a study on 99 undergraduate students who had gone through some computer training and found out that most students were uncomfortable with computers use and most of them indicated that using technology in their learning increased their workload. It was clear that some learners were not yet competent in using the new technologies and that is why they found it taking a lot of time. Giving very little time for training on ICT is therefore not fruitful at all.

Due to the inaccessibility of the ICT for the blind in the schools, it therefore demanded that the Kenya Government come in to support. The role of the government in equipping teachers and learners with the requisite ICT knowledge was instrumental in enabling access to quality education for these learners.

C. In-service Teacher Training

The researcher sought from the head teachers whether teachers had attended any in-service training on the technology for the blind. The findings are as presented in Figure 1

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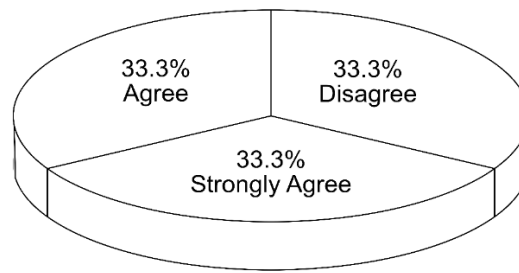


Figure 1: In-Service Teachers Training

From the figure, two third of the respondents indicated that teachers had attended in-service training on the new technology while a third disagreed. It was also established that the in-service training was to equip teachers with the new technology though the teachers who attended it still found using ICT a frustrating affair.

The findings are not unique to Kenya situation. Ozden (2007) conducted a research in Turkey where he found that the main problem with the implementation of new ICT in science was the insufficient amount of in-service training programmes for science teachers. Also, research by Gomes (2005) relating to science education concluded that lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom and lack of training concerning the use of technologies in science specific areas were obstacles to using new technologies in classroom practice. This finding is also in agreement with Mugo's (2013) who asserted that training of teachers on how best to use assistive technologies in the classroom is a major concern world over. Thus teachers especially those who are blind lack trainers on focusing on the study of technologies themselves leave alone that of educational technology (support for teaching in the classroom). These trainers lack knowledge and skills in pedagogy and andragogy.

D. Head teachers support of ICT

The head teachers were asked to give reasons why they supported the use of ICT in their schools. The following assertions were made: (i) "the Learners use computers to write notes and access textbooks a practice which has improved their performance" (ii) "braille material is very expensive and therefore soft copies which are easily accessed hence cutting down the cost". (iii) "Most of ICT resources for instance laptops are more portable compared with braille text books which are cumbersome and heavy to carry. (iv) "The learners are able to access academic and non-academic material online and even learn at their own pace". What the head teachers concluded has been supported by various empirical studies. For instance, UNESCO (2006) affirmed that ICT offers a great potential to support lifelong learning to all groups of students including those who have special educational needs. Additionally, Mugo (2013) construed that those ICT resources if well used leads to access of quality education for the learners that are visually impaired.

Although the head teachers knew the importance of supporting the use of ICT in their schools, implementing what they said was not easy. They revealed that they feared that some of the ICT resources would be stolen, that the learners can access pornographic sites, most learners tend to depend on the voice output software thus forgetting on how to use braille and that the schools lacked of storage facilities. In other words, this fear made the head teachers to restrict the use of ICT in the school. Mwakyeja (2013) postulates that schools for learners with special needs faces many challenges and are often forgotten by the government and the society when it come to the provision of learning resources and material. Additionally, there is often inadequacy of teacher training in special areas including the school management for schools that houses learners with special needs (Korir, 2015).

The inadequacy of teacher education gives rise to challenges within the course of acquisition of education by the visually impaired students (Mwakyeja, 2013).

E. How ICT resources are obtained in the schools

When asked how the schools obtain the ICT for their schools, the school head teachers unanimously revealed ICT resources

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used by learners with VI were donated and maintained by Non-Governmental Organizations (NGO) and not the government. The head teachers were of the opinion that the government should support the schools. They also requested for the teacher training to enhance their ICT skill levels and consequently their quality of teaching the learners with VI. The head teachers reiterated that in-service training for teachers on the use of ICT for the blind should be allocated more time.

F. Technical support in the schools

On the issue of technical support, the researcher requested the computer laboratory technicians to describe the management of ICT resources in the schools. The computer specialists revealed that they were all employees of the In-able (NGO) which installed computer laboratories for learners with VI in the schools. They further reiterated that computer laboratories are not enough for the learners. One statement, which was echoed by all, was that:

“The management of the school could include parents and the community to raise funds to build more computer laboratories to decongest the available ones. This will go a long way to improving ICT accessibility to many learners with VI.”

These findings contradict the ICT policy where the ministry of education demands that all teachers must embrace the use of ICT in the process of teaching and learning (MoE, (2010). Furthermore, MoHEST (2012), found out that there was a key issue affecting ICT provisions, especially in special schools. The lack or scarcity of ICT in schools is not a standalone barrier to the use of the same in the education of learners with visual challenges. According to Nang’unda (2019), the establishment of an efficient management structure, goal-setting, decision-making, and relationship-building are all administrative tasks that school leaders find crucial in supporting. A school administrator's job is to make sure that certain tasks are allocated, carried out, and that there is ongoing input to enhance overall school management. Technology is changing education, but not all students or staff members will benefit from its advantages, claims Malik (2018).

The emphasis on ICT use during initial teacher training courses was acknowledged to have an impact on more recently qualified personnel in all the three schools under examination, and whole school training days were recognized as being influential. Ghavifekr et al. (2016) opine that teachers must also understand when technical assistance is available and how to use it. Computer use in education and training is growing in popularity. Institutions of higher learning now cannot function without computers. School administrators are expected to take on leadership roles in fields with which they have little experience and are unfamiliar. The findings of this study are also in agreement with those of Mutisya et al. (2017) which revealed that there is a significant positive association between computer infrastructure and ICT integration in school management. According to a study by Uncluer et al. (2010), the usage of ICT was dependent on the principals' cooperation in setting up in-service training sessions and maintaining the school website for faculty use. Since ICT is a crucial part of organizational management procedures, the principal and the larger staff must be ICT knowledgeable.

To ensure integration, principals must use their creativity while obtaining resources. This creates a climate that is conducive to teamwork. The lack of appropriate ICT practice models, as well as a lack of institutional, administrative, and technical support, were cited by Akbar et al. (2022) as obstacles to ICT adoption. The hurdles were further broken down into school and individual barriers, suggesting that they might not always be about administrative help but rather going beyond their bounds. The type of administrative support offered is largely related to the attitude of principals toward ICT integration in management.

REFERENCES

- 1) Afshari, M., Baker, K. A. & Luan, W. S. (2009). Factors affecting teachers use of Information and Technology. *International journal of instruction* January 2009. Vol 2 No 11:1694-609x. www.e.finet
- 2) Akbar, A., Jabbar, A., Saleem, Q. U. A., & Ashiq, M. (2022). Access and Use of Digital Information Resources by Students with Vision Impairment: Challenges, Prospects and Expected Role of Libraries. *International Journal of Disability, Development and Education*, 1-19.
- 3) Al- Alwani, A. (2005). Barrier in integrating information technology in Saudi Arabia science education. Doctoral Dissertation, the University of Kansas, Kansas.
- 4) Binder, M., & Niederle, U. (2007). Institutions of determinants of preference change. A one way relation? Paper of Economic Evolution number 0607.
- 5) Biwot, J. (2012). Evaluation of factors influencing implementation of computer studies curriculum in Nandi Central District Public Secondary Schools. University of Eastern Africa; Baraton. Unpublished Thesis.
- 6) Bryderup, I. M., Kowalski, K. (2002). The role of local authorities in the integration of ICT in the learning, 18(4), pp 468-48
- 7) Chin, J. M. C., Ching, G. S., del Castillo, F., Wen, T. H., Huang, Y. C., del Castillo, C. D., ... & Trajera, S. M. (2022). Perspectives on the Barriers to and Needs of Teachers' Professional Development in the Philippines during COVID-19. *Sustainability*, 14(1), 470.
- 8) Cook, A.M. & Polgar, J.M.. (2014). *Assistive technologies: Principles and practice*: Fourth edition.

School Administration Related Factors that Influence Access to and use of ICT in Special Schools of Learners with Visual Impairment

- 9) Coudie, R., Monro, B., Seagraves, L & Kenessons, (2007). The Impact of ICT in schools – a lands cape review. UK.
- 10) Eligi, I., & Mwantimwa, K. (2017). ICT accessibility and usability to support learning of visually-impaired students in Tanzania. *International Journal of Education and Development using ICT*, 13(2).
- 11) Fu, S. J. (2013). *ICT in Education; A critical Literature Review and its implication*. National Institute of Education, Singapore.
- 12) Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology*, 4(2), 38-57.
- 13) Gomes, C. (2005). Integration of ICT in science teaching. A study performed in Azores, Portugal. *Recent Research Developments and learning Technologies*.
- 14) Khan, S. (2007). The G3 ICT initiative; implementing the resolution of the world summit on the information society and the millennium Goals. InGzict (Editor). *The accessibility imperative*.
- 15) Kimuyu, D. N. (2016). *Factors Influencing Principals' Integration Of Information Communication Technology In Administration Public Secondary Schools In Kitui Central Sub County, Kenya* (Doctoral dissertation, University of Nairobi).
- 16) Korte, W. B. & Husing. T. (2007). Bench Marking access and use of ICT in European schools 2006. Results from head teachers and classroom Teacher surveys in 27 European countries. *Learning papers*, 2(1), 1-6.
- 17) Lewis, S. (2003). Enhance teaching and learning of science through use of ICT: Methods and materials school science review, 84(309), 41-51.
- 18) Malik, R. S. (2018). Educational challenges in 21st century and sustainable development. *Journal of Sustainable Development Education and Research*, 2(1), 9-20.
- 19) Ministry of Education. (2006). *National information and Communication Technology (ICT) Strategy for Education and Training*. Nairobi; Government Press.
- 20) MoE & MoHEST. (2012). *Reforming Education and training sectors in Kenya*. Sessional paper No.14.Nairobi: Government Press.
- 21) Mrazek, R., Hollingsworth, M. & Street, M. (2005). *Scaling the digital leadership divide*. Norfolk.
- 22) Mugo, B. C. (2013). *Assistive Technology and Access to Quality Instruction for Blind and Visually Impaired Students: A Comparative Study of Kenyatta University, Kenya and Syracuse University, USA* [Thesis]. <http://ir-library.ku.ac.ke/handle/123456789/9009>
- 23) Murray, D. & Compell, N. (2000). *Barriers to Implement Information Technology in some New Zealand schools*. Computers in New Zealand schools.
- 24) Mutisya, A. M., Mulwa, D. M., & Mwanja, J. M. (2017). The influence of principals' related factors on ICT integration in the management of public secondary schools in Kitui County, Kenya.
- 25) Mutisya, A. M., Mwanja, J. M., & Mulwa, D. M. (2017). The influence of school related factors on ICT integration in the management of public secondary schools in Kitui County, Kenya. *European Journal of Education Studies*.
- 26) Nang'unda, K. A. (2019). *Assessment of Principals' Leadership in Information communication Technology Integration in Public Secondary Schools Management in Bungoma County, Kenya* (Doctoral dissertation, Maseno University).
- 27) Ozden, M. (2007). Problems with science and technology education in Turkey: *Eurasia Journal of Mathematics Science & Technology Education*, 3(2), 157-161.
- 28) Papaloannou, P. & Charalambous, K. (2011). Principals Attitudes towards ICT and their perceptions about the factors that facilitate or inhibit ICT integrate in primary schools of Cyprus. Vol. 10, 2011.
- 29) Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education; result from worldwide educational assessment. *Computer in education* 37,163-178.
- 30) Schoepp, K. (2005). *Barriers to technology integration in a technology rich environment, Learning and teaching in higher education; gulf perspectives*, 2 (1),1-24.
- 31) Sicilia, C. (2005). *The challenges and Benefits to Teachers; practices in constructivist learning environment supported by technology*. Unpublished master's thesis, Mc Gill University, Montreal.
- 32) UNESCO IITE, (2006). *ICTs in Education for people with special needs; specialize Training course*. Van der Geest, T., van der Meij,
- 33) & van Puffelen, C. *Self-assessed and actual Internet skills of people with visual impairments*. *Univ Access Inf Soc* 13, 161–174 (2014). <https://doi.org/10.1007/s10209-013-0304-5>
- 34) Waddell, L. (2000). *The pilot Internet Project: Evaluation Report*. London: Royal national Institute for the Blind.
- 35) Waycott, J., Bennet, S., Palgamo, B. & Kennedy, G. (2010). *The Role of Learners learning styles, Gender, Attitudes and Perceptions on ICT Assisted learner*.



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Level and Nature of ICT Use in Teaching and Learning in the Special Primary Schools of Learners with Visual Impairments



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ABSTRACT: Information communication Technology (ICT) has become the most suitable tool for learners with different learning demands exercise their rights to education. Information Communication Technology literacy has enhanced teaching and learning through its dynamics, interactive and engaging content and opportunities for individualized instruction. However, given the role that ICT plays in instruction, the level and nature of ICT use by learners with visual challenges in Kenya should be looked into. The findings are significant for it would help the policymakers as they will be able to come up with effective policies that will aid in the provision, planning and use of ICTs in schools of learners with visual impairment. The objective of the study was to determine the level and nature of ICT use in teaching and learning in the special primary schools of learners with visual impairments in Kenya. The survey adopted descriptive survey research design. The study targeted seven public special schools for visually impaired learners and 1667 learners. The study sampled three schools situated in different counties in the country; Kiambu county, Meru county and Mombasa county. Judgemental sampling technique, stratified random sampling and simple random sampling were used to draw samples. The sample consisted of three primary schools for learners with visual impairments, 168 learners and 18 class teachers. Data collection instrument was observation schedule. Content validity was determined by seeking expert review. The instruments were submitted to experts iteratively for consideration and their suggestions in different items were used to refine them increase validity. The Cronbach Alpha formula was employed to compute the reliability of the instruments. A reliability coefficient of 0.72 was used to judge the reliability of the instruments. Qualitative data was analysed using descriptive statistics. The study found that ICT enjoyed full support from learners with visual impairments and teachers in class. It was seen as an essential tool for teaching and learning in special schools for the learners with visual impairment. However, the use of ICT in teaching and learning was not effective. Both the teachers and learners' ICT skills were low and the schools were not well equipped with quality ICT resources. The study recommended that schools be equipped with modern technologies and teachers be trained on the use of ICT in teaching learners with visual challenges.

KEYWORDS: ICT levels; ICT utilization; teaching; learning; visual impairment; special schools.

I. INTRODUCTION

The rapid development and adoption of technology has fundamentally changed almost every aspect of life. Research world over has proved that one of the greatest remedies to the problem of access to quality education for learners with VI is the use of ICT in pedagogy. UNESCO (2006) construes that ICT has become the most suitable tool which can help people with different learning challenges exercise their right to education, employment, social life, leisure, access to information and democratic channels. Information communication and Technology literacy has enhanced teaching and learning through its dynamic, interactive and engaging content and has provided real opportunities for individualized instruction. Despite the availability of a growing number of technology and sophisticated assistive devices that provide alternative formats to support the learning of learners with VI, there are numerous challenges in when to use ICT tools in special schools for learners with VI in Kenya.

Studies by Shiue (2007), in Taiwan found out that teachers' ICT integration in the teaching-learning process was largely determined by teachers' skills in using technology. Buabeng (2012) in Ghana revealed that effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT infrastructures and resources such as hardware and software. Study by Ngwu (2014) in Nigeria found that there were enough ICT resources but the use of it in teaching and learning was below expectation. Research by Namibia Training Authority (2006) in Namibia indicated that there are barriers to the integration of ICT in inclusive settings. These barriers included attitudinal, administrative, architectural, programmatic and training

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of facilitators.

East African region also suffer from ineffective use of ICT for learners with disabilities. A study by Sabomana (2017) in Rwanda revealed that the level of integration of ICT in teaching and learning science in lower public primary schools was low. It was found that the minimal use of ICT was influenced by inadequate ICT abilities among the majority of science teachers and inadequate resources in most primary schools. A study carried out in Kenya by Makanda (2015) on the use of ICT in teaching found that teachers though had a positive attitude towards the use of ICT, barriers such as inadequate skills to integrate the technology in their teaching were a problem. Alma (2014) in his study construed that ICT integration in classroom instruction in Kenya is constrained due to lack of adequate training and refresher courses for teachers, inadequate resources and inadequate support from technicians and administration. Biwot (2012) cited determinants of ICT access in schools as the capability of the implementers that is teachers, head teachers and education officers; availability of materials and resources, positive attitudes of teachers and learners, existing school set up and supportive management.

There are a number of causes for lack of access to technology according to several research reports. According to Rasheed et al (2020) study, he found out that teachers grumble about how challenging it was to always have access to computers in school. The authors cited factors such as the fact that computers had to be reserved in advance and the teachers would forget to do so, or they could reserve them for multiple periods in a row when they wished to work on several projects with the learners. Eligi and Mwatinya (2017) construed that ICT resources are not always inaccessible because the school does not have the necessary hardware, software or other ICT materials it could also be the result of several other factors including lack of personal access for teachers, inadequate resources organization, low quality hardware, improper software or defective hardware (Becta 2004).

The difficulties of making new technology accessible to teachers are numerous and vary from nation to nation. According to Almanthari et al (2020), there are infrastructure constraints in schools, such as the lack of broadband connectivity. The findings indicate that only one-third of European schools have access to broadband internet. According to Gharifekr et al. 2016, there are several factors that prevent the successful adoption of ICT in Turkish schools, including the lack of computers, outdated or slow ICT systems and lack of educational software. Studies by Renukadevi et al (2018) on the factors influencing the effective use of ICT in education and learning, found that poor connectivity; self-enthusiasm; required extra time, incentive to integrate ICT tools in teaching certain ICT software is difficult to learn and use are the most significant factors.

Kisanga and Kisanga (2021) findings on the availability of assistive technology for students with visual impairment at higher education institutions in Tanzania revealed that the availability of assistive technology (AT) and the user's technical proficiency are key factors in a student's use of it. Mugo (2013) points out that by nature blindness presents obstacles that might greatly affect access to quality education for instances understanding of information and application of the lessons derived from the information require a fully derived cognitive ability unfortunately most learners with visual impairments are faced by major cognitive problems.

II. STATEMENT OF THE PROBLEM)

The access and use of ICT in pedagogy is currently high. The impact of ICT use in education sector world over is positive. Kenya has made considerable effort to make schools accessible to all groups of learners including those with visual challenges. To ensure quality education for all, the government has given support and put emphasis in the use of ICT in all schools at all levels including special schools. Moreover, legislations such as the Kenya constitution (2010), Persons with Disabilities Act (2003) and the Special Needs Education Policy (2009) has resolved in improving the quality of education for learners with disability. However, research has shown that these learners still lag behind their sighted peers in education and this has generated numerous questions with respect what could be done to help the learners compete equally with their peers. Basing on the fact that ICT plays a great role in the education of these learners, access of ICT in the schools could play a vital role in helping the learners to acquire quality education. In view of this gap, it was thought worthwhile to undertake this study with the view to determine the access and use of ICT in schools of learners with VI.

III. METHODOLOGY

The study aimed to determine the level and nature of use of ICTs in teaching and learning in special primary schools for learners with visual impairments. The study adopted descriptive survey design. A descriptive survey research design was appropriate for the study since it describes systematically the facts and characteristics of a given population or area of interest, factually and accurately. According to Mugenda and Mugenda (1999), descriptive study is probably the best method for social scientists and educators who are interested in collecting original data for describing a population. The survey approach was used to assess thought, feelings and opinions of the respondents concerning the access and use of ICT in the instruction of learners with visual challenges. The study targeted seven special primary schools, of learners with visual impairment; 1667 learners with visual

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impairment; 7 computer teachers; seven head teachers and 7 Ministry of education officers. These schools were targeted because they had population enough for the study and also had established computer laboratories which offer the learners with visual impairment with ICTs facilities and other assistive technologies. The target population in this study was the learners with visual impairment, class teachers, computer teachers, head teachers and ministry of education officers. The learners with visual impairment were the key respondents of the study. This was to gain deeper insights on the level and nature of usage of ICTs facilities. Computer teachers are special teachers who are trained to assist learners with visual impairment on to use the adapted computers. Three public schools for the visually challenged constituted the sample population for the study. Judgmental sampling technique which is a non-probability technique, was used to select the schools. Three schools situated in different counties in the country, Kiambu County, Meru county and Mombasa county were sampled. This constituted 43% of the target population. Out of 1667 targeted population of 168 (10%) of the learners were selected as participants in the study. 18 teachers out of 161 (11%), 3 head teachers out of 7 schools which made (43%), acted as study respondents. Three computer teachers from the three selected schools (43%) were selected for the study. Finally, the three Ministry of education representatives (43%) one from each area the selected schools were geographically situated were picked as respondents for the study.

Table below shows the sample frame

Table 1: Sample Frame

Category of Respondents	Target population(N)	Sample(n)	Percentage(%)
Special schools	7	3	43
Learners with VI	1,667	168	10
Class teachers	161	18	11
Computer teachers	7	3	43
Head teachers	7	3	43
Ministry of Education officers	7	3	43
Total	1,849	195	10.5

IV. ANALYSIS AND DISCUSSION

The objective of this research was to determine the extent of access and use of ICT by learners with visual impairment in special schools. To achieve this objective, it was important for the researcher to find out the demographic information about the learners and the teachers, the resources available in the schools and the use or how teachers utilize ICT in the classrooms

A. Demographic Data of the Learners

Learners with visual problems could be divided into two major groups; those who are blind and those with visual impairments or challenges. These two categories apparently access ICT differently (Mugo) 2013). This research hence first categorized the learners in gender and went further to establish the extent to which the learners were affected in terms of vision. The following Table presents the categories of the learners in terms of gender and category of vision.

Table 2: Demographic Information of the Learners

Category of Learners	Male	Female	Total
Blind	40 (24%)	73 (43%)	113 (67%)
Low Vision	34 (20 %)	21 (13 %)	55 (33%)
Total	74 (44%)	94 (56%)	168 (100%)

Table 4 shows that more than half of the learners in the study were females. Most of the learners are blind and almost half of the blind learners in the sample were females. Slightly more than half of the learners in the sample were in the category of low vision. Most of the low vision learners are males. It was imperative to consider gender issue in this research demographic data since this influence the way in which research recommendation and suggestion implementation strategy works. In essence, it makes it clear the implementation for whom, under what circumstances and why (EIGE, 2019).

B. Demographic Information of the Teachers

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Table 3: Demographic Information of the Teachers (N=18)

Demographic Information		F	%
Gender	Male	8	44
	Female	10	56
Ages (Years)	20-30	1	6
	31-40	2	11
	41-50	7	39
	51-60	6	33
	Beyond 60	1	6
	Non committal	1	6
Experience in teaching VI	1-5 yrs	-	00.0
	6-10 yrs	3	17
	11-15 yrs	6	33
	16-20 yrs	4	22
	20 yrs & Over	5	28
Highest academic qualification	KCSE/ KCE	11	61
	B. Ed	5	28
	Post graduate	1	6
	Noncommittal	1	6
Best professional qualification	P1	3	17
	Diploma	8	44

	B.Ed	5	28
	Masters	1	6
	Noncommittal	1	6

Slightly more than a quarter were between 51 and 60 years of age. Those who were between 31 and 40 were less than a quarter. One teacher fell below 30 years and another one was 60 beyond years. The teachers had different experiences in teaching learner with visual challenges. Majority of the teachers had taught for 11 to 15 years, more than a quarter had taught for over 20 years while about a quarter had taught for between 16 to 20 years. All the teachers had taught for more than five years. The Table further reveals that majority of the teachers had diploma and slightly less than a quarter had bachelor degree in education. This shows that apart from the teaching experience, these teachers had good academic qualification. Indeed, those who had done diploma had perused it at the Kenya Institute of Special Education (KISE). This clearly tell that the teachers were trained and had substantial experience in teaching the learners who are visually challenged and hence could make concrete contribution to this study.

Table 4: ICT resources Available in the Schools for VI

Type of AT	Number of items		Ratio of functional items to number of learners
	Functional	Non functional	
Ipods and ipads	6	-	6:1667
Computers with voice output software	52	-	52:1667
Enhanced Vision Systems Cameras	2	-	2:1667
Talking calculators	32	-	32:1667
Embossers	3	-	3:1667
Scanners	3	-	3:1667
Braille sense	1	-	1:1667
CCTVs	6	-	6:1667
Smartphones	68	-	68:1667
Tablets	30	-	30:1667
JAWS (Screen reader software)	6	-	6:1667
NVDA (screen reader software)	Free online	-	1667
Audio recorders	6	-	6:1667

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Electronic books	36	36:1667
Compacts Discs	8	8:1667

From Table 2 it is evident that the schools have a variety of modern ICT resources, which could be helpful in accessing quality education for the learners. For instance, iPods and iPads (6) have many built-in functions that help improve productivities and academic performance for these learners. Leibs (1999) observed that the learners using these devices could also browse the web, chart, send and receive emails and so on. Braille sense though it was only one in the three schools that were sampled for the study offers the ability to perform various tasks simultaneously. This device provides all the functionality of a laptop computer, including WiFi, MSN chat, and document processing, and so on. Braille embosser technology (3) enhances the production of braille in terms of production of many copies of braille documents. It was observed that the embossers were used to create tactile graphics and also to make copies of braille texts in the schools. (Johnson, 2004). In a relative study, Zaid (2018) supports this finding when he identified Computer, Video Conferencing, Internet, and World Wide Web as the top ICT facilities that are helpful in learning for the visually impaired. Also crucial is the use of various AT tools for visually challenged pupils, including screen readers, Braille translation software, Braille writing instruments, closed-circuit television (CCTV), Braille embossers, and scanners. Print enlarging technology including the enhanced vision system camera (2) enables magnification of very small print for easy reading. In addition, available was CCTV (6) enables the students to read print text easily. The screen readers which included the Jaws (6), and the NVDA allows the challenged users to interact independently and efficiently with the computer. Some of this software for example the Jaws and the NVDA have features that enable enlargement of print text on the computer screen for easy reading. The special scanner (1) is used to scan texts with small font and change the image to digital form which can be enlarged and even converted into braille (Mugo, 2013). According to Simui et al. (2017) assistive technologies can help visually impaired students all over the world learn by facilitating information access and retrieval, contacting friends, and knowledge sharing just like sighted individuals do. ICT is essential for promoting the participation of the blind, especially in educational activities. In fact, ICTs can aid in exceptional ways to reduce and even eliminate the feeling of prejudice and open access to knowledge. ICT is typically utilized as a tool to enhance efficacy and efficiency in several socio-economic spheres, including education, hence raising quality of life.

Further, Table 2 presents the ratios, which indicates whether ICT available in the schools met the demand of the users. Looking at the ratios, one would tell that only those technologies that were multi users for instance audio recorders (6:1667) would efficiently serve the three schools. However, it was noted that one of the schools had only one while another had three. The NVDA software was free online and hence the schools could access it with ease. The scanners (3) and the embossers (3) would also be used to serve many users at the same time. Smartphones from the ratios appears to be many but these belonged to individual teachers and therefore the learners would only access them when their teachers used them in the classroom. According to Kisanga and Kisanga (2020), assistive technologies benefit people with visual impairment by making electronic resources and tests more accessible, improving the reliability of students' work, expanding employment options, and decreasing overdependence. Additionally, assistive technology including audio recorders help people with vision impairment manage their academic and social obligations as well as direct their career paths. In the field of education, scanners (3) and the embossers provides instructors with cutting-edge resources to assist students with VI and other special needs in overcoming obstacles to their teaching and learning (Tom et al., 2018).

From the ratios presented in Table 2, it was clear that the resources were not enough in the schools. Scarcity of ICT resources in schools is a common thing especially in the developing countries. ETD (2012) postulates that a very small number of learners with disabilities get access to adaptive technology in the developing countries. This problem is not unique in the developing countries. Studies in the developed countries including USA have also shown that these learners suffer from the same problem (ACAMPESD, 2011; Mugo 2013). The cost especially for special ICT is intimidating. According to Hasselbring (2000), the special Technology ranges between 700 to 2000 US dollars. This means that the ICT resources are not easily affordable especially by the students and even the schools in the developing countries. Scarcity of the of ICT resource possess a serious challenge to the access of quality education for the learners living with visual impairment. Accessing the ICT resources in the schools of learners with VI is crucial because it will inform the researcher on how to approach other objectives. The availability of resources in the schools means that learners and teachers are expected to use them during teaching and learning and if not the research is to find out why they are not utilized.

C. Class Observation

Classroom observation was to ascertain the level of use and access of ICT in class during pedagogy. The information gathered by

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the research included, how often the teachers used these resources and the degree of preference, comfort and ability in teaching using the ICT tools. In this context, this research established how the learning with ICT took place in the classrooms. The head of the departments who included head of mathematics, head of sciences head of languages and head of humanities (4 teachers) from each school were followed in the classroom for at least three times each. This made a total observation of 36 lessons. The connotation here is that in order to benefit from the impact of the role played by ICT in education, one's ability and style to navigate and explore through ICT is critical. The word access here could hence be viewed in two perspectives; one the right or opportunity to have; that is acquisition of these tools and two the ability and approach to use.

Classroom observation was done based on the instructional strategies and what the strategies supported to enable the learners' long-life learning and that which influence acquisition of skills and values that would help the learners fit in the current dynamic trends of life and education of the 21st century.

Table 5: Use of ICT in the Classroom of Learners with Special Needs

Strategy	Support	Lessons observed	Percentages
Student motivation	Principles, attitude etc.	2	6%
Developing creativity	Brain sketching, concept mapping, roleplay, case studies etc.	1	3%
Evoking prior knowledge	Concept mapping, charts, graphics organizing, anticipatory guiding etc.	3	8%
Development of different skills	Problem solving, research, communication etc.	7	19%
Supporting Process	Interpreting, organizing, logical thinking, reasoning, etc.	3	8%
Total		16	44%

According to findings in Table 5, it is clear that ICT was used in supporting learning in very few lessons (16) out of the 36 lessons that were observed. It was in only two lessons that the teachers used ICT to motivate learners. It was in only one lesson where the teacher endeavoured to develop creativity in the learners. Making learners creative is one of the core aspects of the 21st century and ICT plays a great role in enhancing this. It was in three lessons out of the 36 observed that the teachers tried to capture the learner's previous knowledge with ICT. Prior knowledge helps the learner in understanding the new concepts and in constructing new knowledge (Hoque, 2016). Development of different skills in the learners with special needs is a vital thing in their education. However, from the 36 lessons observed it was only in seven that the teachers endeavoured to develop various skills in the learners. It was in only three lessons ICT tools were used to develop process for instance interpreting, logical thinking, reasoning and so on. According to Mugo (2013), in such a situation where there is scarcity of ICT resources and lack of relevant and effective training, creativity is a priority on the part of the user. Botelho (2012) construed that what can really help in such a situation is the ICT strategy not devices. In consideration of this, and based on the data in Table 2, one would construe that the ICT was not well employed to ensure access to quality education for the learners with special needs. According to the statistics of the World Health Organization, just persons with impairments, especially students, have limited access to ICT (WHO, 2016). In most of the classes, it was observed that the teachers orally systematically explained the lesson concepts and then dictated notes to the learners. In other words, the teachers put little effort to actively involve the learners in the lessons where the learners could get the opportunity to learn with the ICT in an enabling learning environment.

Normally, the special ICT should be used to support learning in all academic areas (Mugo 2013; Wiazowski, 2009). Accordingly, the use of ICT with special needs learners should influence their psychological, intellectual, social and cultural conditions exposed to them. In the 21st century what matters most is what a learner can do with the knowledge he or she has acquired not how much of the knowledge the learner has accumulated (Botelbo, 2012). It means the learners did not effectively access the ICT resources and therefore did not have access to quality education. This is contrary to the developed countries where the ICT has helped the learners to access quality education.

According to Hassellbring and Glaser (2000) ICT especially in developed countries has enhanced the visually challenged learners participation in teaching and learning and has helped them to become independent and competitive learners. Further, findings by UNESCO (2006), attest to the fact that ICT offers a potential support to lifelong learning for all groups of students, including those who have special educational needs and had made learners develop greater pride in their work and tasks are completed on time. Also, Fu, (2013), construed that ICT offers more opportunities in developing critical higher-order thinking skills in the learners. ICT

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also offered diversity in the teaching methods applied by teachers encompassing all learners.

V. CONCLUSION

The study found out that ICT was used in supporting learning in very few lessons. 16 out of 36 lessons that were observed. The study therefore concluded that the teachers put little effort to actively involving the learners in the lessons where the learners could get the opportunity to learn with ICT in the enabling environment. Despite the fact that the resources were limited, the few available were not utilized by the teachers in class during lessons.

VI. RECOMMENDATION

The study recommends that a vigorous training on the use of ICT resources and other assistive technologies should be conducted early enough for the learners with visual impairment in order for them to reap full benefit of these technologies in their education. The government through the ministry of education should ensure that these are available, adequate and in functional status. ICT and other assistive technologies for the visually impaired in the schools.

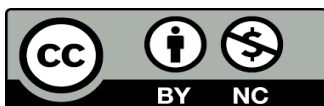
REFERENCES

- 1) Alma, R. (2014). Assessing Integration of Information and Communication Technology in classroom instruction by physics teachers in Nairobi County, Kenya.
- 2) Almanthari, A., Maulina, S., & Bruce, S. (2020). Secondary School Mathematics Teachers' Views on E-Learning Implementation Barriers during the COVID-19 Pandemic: The Case of Indonesia. *Eurasia journal of mathematics, science and technology education*, 16(7).
- 3) Biwot, J. (2012). *Evaluation of factors influencing implementation of computer studies curriculum in Nandi Central District Public Secondary Schools*. University of Eastern Africa; Baraton. Unpublished Thesis.
- 4) British Educational Communications and Technology Agency (BECTA), (2004). *A review of the research literature on barriers to uptake ICT by teachers*.
- 5) Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using ICT*, 8(1).
- 6) Eligi, I., & Mwantimwa, K. (2017). ICT accessibility and usability to support learning of visually-impaired students in Tanzania. *International Journal of Education and Development using ICT*, 13(2).
- 7) European Institute for Gender Equality, (2019) Gender mainstreaming: Gender Statistics and Indicators (Retrieved on 20th April 2022 from <https://eige.europa.eu/gender-mainstreaming/methods>).
- 8) Fu, S. J. (2013). ICT in Education; A critical Literature Review and its implication. National Institute of Education, Singapore.
- 9) Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology*, 4(2), 38-57.
- 10) Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology*, 4(2), 38-57.
- 11) Kisanga, D. H., & Kisanga, S. E. (2021). Access to assistive technology among students with visual impairment in higher education institutions in Tanzania: challenges and coping mechanisms. *University of Dar es Salaam Library Journal*, 15(2), 137-151.
- 12) Kisanga, D. H., & Kisanga, S. E. (2021). Access to assistive technology among students with visual impairment in higher education institutions in Tanzania: challenges and coping mechanisms. *University of Dar es Salaam Library Journal*, 15(2), 137-151.
- 13) Makanda, J. L. (2015). Use of ICT in teaching physics: A case of secondary schools in Kimilili, Bungoma County, Kenya. <http://ir-library.ku.ac.ke/handle/123456789/13431>
- 14) Makanda, J. L. (2015). Use of ICT in teaching physics: A case of secondary schools in Kimilili, Bungoma County, Kenya. <http://ir-library.ku.ac.ke/handle/123456789/13431>
- 15) Mugenda O.M & Mugenda A.G (1999). *Research Methods. Quantitative and qualitative Approaches*. Nairobi. Acts press.
- 16) Mugenda, O. M. & Mugenda, A. G. (2003). *Research methods; Quantitative and Qualitative approaches*. Nairobi. Acts Press.
- 17) Mugo, B. C. (2013). Assistive Technology and Access to Quality Instruction for Blind and Visually Impaired Students: A Comparative Study of Kenyatta University, Kenya and Syracuse University, USA [Thesis]. <http://ir-library.ku.ac.ke/handle/123456789/9009>
- 18) Mugo, B. C. (2013). Assistive Technology and Access to Quality Instruction for Blind and Visually Impaired Students: A

Level and Nature of ICT Use in Teaching and Learning in the Special Primary Schools of Learners with Visual Impairments

Comparative Study of Kenyatta University, Kenya and Syracuse University, USA [Thesis].
<http://ir.library.ku.ac.ke/handle/123456789/9009>

- 19) Mwanje, J.I (2001a). Issues in Social Science Research. Social Research Methodology Series. Module I. OSSREA. Addis Ababa, Ethiopia.
- 20) Mwanje, J.I (2001a). Issues in Social Science Research. Social Research Methodology Series. Module I. OSSREA. Addis Ababa, Ethiopia.
- 21) Namibia Training Authority, (2006). *International Journal of Education and Development using information and communication Technology (IJEDICT)*. Vol 2. Issue 3. Pp.70 -85.
- 22) Ngwu, O. G. (2014). Assessment of Availability and Utilization of ICT Resources in Teaching in FCE Eha-Amufu Enugu, Nigeria.
- 23) Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020, January). Students and teachers' challenges of using technology in blended learning environments. In *Proceedings of the 2020 the 3rd International Conference on Computers in Management and Business* (pp. 195-200).
- 24) Sabomana, A. (2017). Determinants of Integration of Information and Communication Technology in teaching and learning of science in low public primary schools in Gasabo District, Rwanda.
- 25) Unpublished project. Kenyatta University
- 26) Sabomana, A. (2017). *Determinants of Integration of Information and Communication Technology in teaching and learning of science in low public primary schools in Gasabo District, Rwanda*. Unpublished project. Kenyatta University.
- 27) Shiue, Y. M. (2007). *Investigating the resources of teachers' instructional technology use through the decomposed theory of planned behavior*. *Journal of Educational Computing Research*, 36(4), 425-453.
- 28) Simui, F., Ngandu, S. K., & Nyaruwata, L. T. (2017). ICT as an Enabler to Academic Success of Students with Visually Impaired at Sim University. *Zambia ICT Journal*, 1(1), 5-9.
- 29) UNESCO IITE, (2006). *ICTs in Education for people with special needs; specialize Training course*. Zaid, Y. A. (2018). Inclusive Education Policy as Platform of Library Services for Students with visual Impairment in Nigerian Universities: Lessons from the United States of America.



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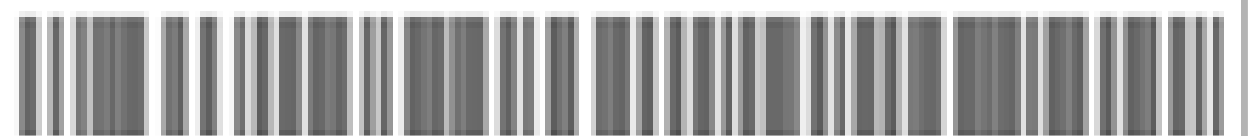
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